RAJENDRA INSTITUTE OF MEDICAL SCIENCES, RANCHI

Sample Tender paper for Equipments - (i) C.T, MRI etc of Radiology (ii) for Upgradation of existing ICUs & ICCUs of various departments (iii) Modular O.Ts of Various Departments & (iv) Bio Medical Waste Grade Autoclaves, Microwaves, Shredders etc, on turnkey basis at RIMS, Ranchi

Tender Notice No. 8147 dated : 02.12.2015

Issued to

M/s _____

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Against money receipt number ……./RIMS, dated : ……

Cashier
RIMS, Ranchi

Invitation of tender notice for Equipment of (i) C.T, MRI etc of Radiology (ii) for Upgradation of existing ICUs & ICCUs of various departments (iii) Modular O.Ts of Various Departments & (iv) Bio Medical Waste Grade Autoclaves, Microwaves, Shredders etc, on turnkey basis at RIMS, Ranchi

To,

M/s _____

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Dear Sir,

Director, Rajendra Institute of Medical Sciences, Ranchi invites you to tender for Equipments (i) C.T, MRI etc of Radiology (ii) for Upgradation of existing ICUs & ICCUs of various departments (iii) Modular O.Ts of Various Departments & (iv) Bio Medical Waste Grade Autoclaves, Microwaves, Shredders etc, on turnkey basis at RIMS, Ranchi.

If you are in a position to quote for supply & installation in accordance with requirements stated in short tender notice & tender form, you must also furnish all the information, called for, along with your tender.

This tender is non transferable.

All legal matter in respect to this tender will be subjected to jurisdiction of Hon'ble Jharkhand High Court, Ranchi.

The last date of submission of tender by registered posts / speed post only,	--	19.01.2016 (upto 4:30 p.m).
Date for opening technical bid	–	20.01.2016 at 12:30 p.m.

Yours faithfully

Sd/-
Director
Rajendra Institute of Medical Sciences
Ranchi

Technical compliance report duly filled and signed with seal of the bidder.

The bidders must fill all the rows/columns of this compliance report. This report will be inspected & evaluated by purchase committee and accordingly documents will be verified on the concerned page numbers.

Sl. No.	Enclosures required	Have you enclosed it? write clearly Yes or No	If yes then on page no. of this bid.
	In case of lack of any essential required documents the tenders will be rejected - The list of essential required documents which must be submitted with technical bid of the bidders :		
1.	Photocopy of JVAT (Sales tax) Registration certificate in Jharkhand State.	Yes/No	Page No. ……
2.	Photocopy of JVAT/Sates tax clearance certificate of Jharkhand State, valid at the time of opening of technical bid. **OR** If the bidding agency is not registered under Jharkhand sales tax department, then they must give an undertaking through notary affidavit that "They will supply the equipment/items at RIMS, Ranchi after payment of JVAT/Jharkhand Sales tax on their own & they will make their own arrangements for custom clearance in case of imported equipments. They shall not demand any document from RIMS for JVAT/custom clearance/duty exemption/waiver/relief in this regard".	Yes/No	Page No. ……
3.	Copy of Manufacturing certificate or original copy of authorization from original equipment manufacturer in the name of authorized bidder for bidding on their behalf. (Photocopy or fax copy will not be valid).		
	(i) Whether manufacturer or authorized dealer	Write clearly manufacturer or authorized dealer	If manufacturer then valid manufacturing licence on Page No…….
	(ii) If authorized dealer then write names of the original manufacturers and enclose the authorizations issued to you. e.g.		
	a. Authorization letter of M/s …….. b. Authorization letter of M/s …….. and so on	Yes or No Yes or No	On Page No. …. On Page No. ….
4.	I.T. PAN no. of the bidder.	Yes or No	On Page No. ….
5.	Earnest money in form of Demand Draft issued by any nationalized bank only in faviour of **Director, Rajendra Institute of Medical Sciences, Ranchi –** (1) for C.T., M.R.I etc of Radiology department	Yes or No	On Page No. ….

	Rs. 10,00,000/- (Rupees Ten lakhs only). (2) for Upgradation of ICUs & ICCUs of various departments Rs. 3,00,000/- (Rupees Three lakhs only). (3) for Modular OTs of various departments Rs. 4,00,000/- (Rupees Four lakhs only). (4) for Biomedical Waste Grade autoclaves, microwaves, Shredders etc. Rs. 1,50,000.00 (Rupees One lakh Fifty thousand only)		
6.	Affidavits through first class magistrate / Notary Public, mentioning that – (a) "Our company has not been black listed or convicted in the past by any Hospital Organization or by any Government / Semi government organization / P.S.Us / C.B.I / C.C.I & free from all kind of litigation/allegations, (b) That the firm has no vigilance case/CBI/FEMA/CCI case pending against him/supplier (Principal) (c) That the firm is not supplying the same item at lower rate quoted in the tender to any government organization or any other institute".	Yes or No	On Page No. ….
7.	Technical specifications with catalogue & dimensions of equipment, accessories & details of turnkey works. The bidders have to provide complete layout plan of the constructions & electrical works (if any) required and to be done by the bidder within their offer for installation & functioning of the complete system.	Yes or No	On Page No. ….
8.	I.T. return certificate & balance sheet of the bidders for last three financial years.	Yes or No	On Page No. ….
9.	Acceptance letter/undertaking that they shall provide five years comprehensive warranty for all the equipments and turnkey works. Then further five years comprehensive maintenance contract with all spares, accessories & labour charges for all the equipments as well as turnkey works.	Yes or No	On Page No. …
10.	For Radiological equipments bidders must have to enclose the license or NOC issued from Indian Atomic Energy Regulatory Board, Government of India for the same model of equipment which they have / are quoted / quoting in this tender.	Yes or No	On Page No. …
11.	The bidders of Biomedical waste grade autoclave, microwave, Shredders etc must have to give an undertaking that their quoted products are as per norms of Central Pollution Control Board (CPCB) / State Pollution Control Boards. If it will not confirm the norms of CPCB / SPCB then the bidders shall replace their equipments by themselves without any extra cost.	Yes or No	On Page No. …

Note :

1. Payment of JVAT/Sales tax form JVAT-504 G / Road permit / Entry tax etc. of Govt. of Jharkhand will not be issued by R.I.M.S. authority. It will be responsibility of the bidders to arrange JVAT form 504-G or any other documents related to sales tax / entry tax on their own.
2. If any of the above enclosures are of more than one page then in the page number columns write clearly on page no. …….…. to page no. ……..

3. Without filling the compliance report the offer will be rejected directly at the time of technical evaluation.

Certificate of Compliance

I Mr. / Mrs. / Miss …….. on behalf of M/s (Name of firm / company) ……..…… do hereby confirm that I have verified the above compliance report, it is duly filled. Our technical bid consists of total (No. of pages) ……. (in words ……..……)

Signature of the Bidder
with date & seal of the firm / company

OFFICE OF THE DIRECTOR
RAJENDRA INSTITUTE OF MEDICAL SCIENCES, RANCHI
Bariatu, Ranchi – 834009 (Jharkhand)

General Terms & Conditions

1. The terms and conditions mentioned in tender notice no. 8147. dated 02.12.2015 of RIMS, Ranchi.
2. The tender should be submitted complete with all documents as per demand of NIT & with specification, literature, leaflet along with catalogues etc. leaving no room for back references.
3. Bids are to be submitted in two parts viz. (A) Technical Bid containing complete technical aspects including original EMD & Affidavit (B) Price Bid containing price elements only.
4. Technical Specification should be in the proforma / format given below :

   Technical Specification Proforma :

   (A) For Equipments -

Sl. No. as per Tender list	Name of Instruments / Item	Name of Manuf. / Model / Size	Tenderer's detail technical specification / Size offered in this bid

(B) – Details of turnkey works with layout plans, measurements, specific items, construction, electrical, plumbing works etc complete for smooth running & functioning of the system. -

Full signature of the

tenderer with seal

Designation : ……

Dated : ……

5. **Price Bid Proforma :**

A. Price of Equipment / Item

Sl. No.	Name of Instruments / equipment / Manuf. / Model	Technical specification of the items / equipments	Unit Price in Indian Rs.	Price FOR RIMS with installation & all taxes.

Note:- All the quoted items must have full guarantee of five (05) years & major equipments must have full guarantee of three years. During guarantee period as well as CMC period, all the defective parts or the complete system if found defective shall be replaced free of cost by the bidder.

Full signature of the
tenderer with seal& date

6. The full EMD shall be forfeited in case of backing out of the offer after acceptance.
7. The successful tenderer have to supply immediately the items in accordance with the specification as finalized and approved by the purchase committee.
8. The tenderer should furnish the guarantee period of the complete system.
9. The bidders have to offer their best quality & latest models of equipment.
10. In case of late supply of materials, penalty will be charged on the bidder as per norms mentioned hereunder :-
    i. After 07 days (one week) from stipulated date of supply completion - @0.5% (point five percent) per week of total contract value uptoto 04 weeks
    ii. After 04 weeks @1% (One percent) of contract value per week upto 08 weeks

iii. After 08 weeks @2.0% (Two percent) of contract value per week upto 12 weks.

iv. After 12 weeks the security money & EMD will be forfeited by RIMS and the bidder will be debarred / black listed for further participations.

A. List & specification of equipment for Radiology

TECHNICAL SPECIFICATIONS

Item No. 1 - DETAILED CONFIGURATION FOR 128 SLICE C.T. SCANNER ON TURNKEYBASIS

Sl. N.	Specifications as per tender
	The Model offered should be the latest High end model under current production, should be Slip Ring Technology. The detector should be of latest technology having nano panel equivalent of Elite/Stellar/Clarity detector technology. Refurbished-Gold Seal Units will not be accepted. The Offer should meet the Specifications as follows
1	**Manufacturer :**
2	**Type & Model:**
3.	**Country of Origin :**
	The system should be latest state of the art, independent 64 or more rows of detectors with acquisition of at least 128 slices per rotation capable of integrating with any PACS/HIS system. The system should be DICOM - ready with true isotropic volume acquisition and sub millimeter resolution. The model quoted should be, AERB Type approved, US FDA and European CE certified. The essential requirements of the system are as follows:-
	a) Gantry:
	- Aperture: 70 cms or more.
	- FOV: 50 cms or more
	- 3-D laser lights for positioning.
	b) X-Ray Generator:
	- High Frequency type.
	- Power output: 80 kW or higher
	- mA Range: 20-600 mA (With incremental steps of 10 mA)
	- KV Range: 90-130 or more
	c) X-Ray Tube:
	- Tube Voltage: 90-130 kV or more
	- Anode Heat Storage Capacity of at least 8 MHU or direct cooling tube with
	- Peak Heat dissipation rate of Anode should be at least 1600 Khu/min
	d) Patient Table:
	- Load carrying capacity at least of 180 Kg with positional accuracy of 1 mm or less
	- Metal free scan-able range of 150 cm or more
	- Floating table top with foot pedal/hand control for positioning.
	e) Spiral Acquisition:

	- Scan Time should be 0.4 sec or less for full 360 degree rotation.
	- Minimum slice thickness should be 0.625 mm or less.
	- Pitch Factor (volume pitch): freely selectable in auto mode and also manually variable between 0.5 to 1.5 or more. Specify all possible pitch selections.
	- Bolus Triggered or bolus chase spiral acquisition should be available.
	- Real time x-ray dose reduction which combines both Z axis and angular tube current modulation to adjust the dose to the size and shape of individual.
	f) Image Resolution:
	1. High contrast resolution should be at least 20 lp/cm for axial and spiral scan at 0% MTF with full FOV.
	2. Low contrast resolution – 5mm or less at 3.0 HU using 20 cm CATPHAN phantom on 10 mm slice thickness.
	g) Data Acquisition System:
	- Detector- Capable of acquiring 128 slices per 360 degree of rotation.
	- At least 64 rows of independent detectors are required with Z-axis coverage of 40 mm or more.
	- Solid state or rare earth detectors of latest technology of low dose and low noise like ELITE/STELLAR/ CLARITY free from repeated calibration.
	h) Image Reconstruction:
	- High speed real time reconstruction with display matrix of 1024x1024 or more.
	- Reconstructed slice thickness should be sub-millimeter to 7mm freely selectable.
	- Latest iterative reconstruction technique to reduce noise and reduce radiation dose should be quoted as standard.The image reconstruction rate should be atleast 16 images/sec with this reconstruction technique.
	i) Operator Console:
	- High resolution medical grade LCD color monitors of 19 or more.
	- Should perform Registration, scheduling, protocol selection, Volume rendering, volume measurements, Multi-planar Reconstruction, and standard evaluation application and all available post processing functions without the help of the satellite workstation.
	- Raw Data storage with at least 200 GB Hard disc having image storing capacity of 2,00,000 or more in 512x512 format.
	- Auto-voice capability with custom designed key board and mouse.
	- Archiving options: CD-R, DVD, should be available. 5000 rewritable DVDs should be provided.
	- Additional storage of 25 terabytes to be offered. It should be possible to transfer the images from this storage to main console or workstations
	j) Workstation client server architecture (Please quote three concurrent licenses for the applications given below)
	1. It should be a high speed (minimum post-processing frame rate of 16 frames/sec) CPU with a speed of 3.0 GHz or better and with three clients hardware having independent Hard disc storage capacity of 1TB or more, with 19 inches or more high resolution 2MP medical grade colour LCD monitors capable of simultaneously viewing and performing all post processing functions and filming independently without the help of main console.
	2. Two way data transfer between the operator console & the satellite workstation should be automatic and standard.
	3. Post Processing Soft-wares
	i) Perfusion CT for whole brain
	ii) CT Angio, VRT, MIP, MPR, 3-D Shaded Surface display, Image Fusion, Vessel segmentation, luminal view.
	iii)Virtual Endoscopy with facility for virtual dissection and computer aided detection of polyps.
	iv) Advanced cardiac package including Coronary Artery Imaging, Calcium Scoring, Myocardial Viability software, Cardiac functional analysis and advanced Vessel analysis including stenosis assessment. Facility for prospective and retrospective ECG gating, facility for automatic selection of rotation speed according to heart beat and step and shoot for low dose acquisition should be available. Temporal resolution of 70msec or less should be quoted as standard.

	v) Automatic bone Removal facility.
	vi) Dental CT.
	(vii) Auto Liver segmentation display software in different colours, volumetry and virtual surgical plane identificationfor a comprehensive analysis and quantification of clinical information.
	5. Interactive & Automatic Cine display should be available.
	6. Image Evaluation Tools:
	i) Parallel evaluation of multiple ROI in circle, irregular and Polygonal forms,
	ii)Statistical Evaluation for area/ volume, S.D, Mean/Max and Histograms.
	iii) Distance & angle measurement, freely selectable, positioning of co- ordinate system, grid and image annotation.
	k) Patient communication system:
	1. An integrated intercom and Automated Patient Instruction System (API) should be provided.
	2. Two closed circuit TV for patient monitoring.

	l) Dry Imager:
	1. Resolution: 14 bits/ 500 dpi or more with minimum two ports.
	2. Support Multiple Film Sizes: one of which must be 17□x14□.
	3. DICOM 3.0 Compatible.
	m) System Configuration Accessories, spares and consumables:
	- Lead Glass 100 cm x 150 cm of 2 mm Lead equivalence as per the requirement of the equipment. As per AERB recommendations
	- Online UPS of suitable rating should be supplied for the complete system including Gantry, computer system, with at least 30 minutes back up.
	- Dual Head Pressure Injector with 200 syringes of 200 ml.
	- Software for Remote Diagnostics Service should be provided.
	- System must be PACS, HIS/RIS interface ready without any new hardware or software.
	- A free comprehensive software update guarantee for entire life of scanner must be provided.
	- **Real time CT Fluoroscopy** with at least 6 to 8 frames per second with dedicated 19" or more color LCD monitor. Facility table side controls and foot switch for biopsy to be quoted separately.
	n) Instructions to the vendors/suppliers: All companies must give product data sheets confirming the specifications along with the tender. ***The compliance statement must be filled strictly under the heading given in the tender.*** Each specification corroborated in the compliance statement must give the page number where it is listed in the product data sheet. Incompletely filled information will not be considered.
	Vendors are requested to see the site for installation of the CT.
	As there is continuous development of technology latest model available with the manufacturer shall be offered in the tender.
	o) AERB site approval: Vendors shall be responsible for getting AERB Site Plan approval prior to installation.
	It is the responsibility of the bidders to visit the consignee site for assessing site requirements and readiness.
	The technical specifications given above are the minimum requirements. Higher specification will also be considered at the time of technical evaluation.
	Training: On site clinical training of 4 weeks to be provided over a period of one year.

Item No. 2 - TECHNICAL SPECIFICATIONS FOR 3.0TESLA MRI SCANNER

Whole Body 3.0 Tesla Magnetic Resonance Imaging System optimized for maximal performance in Whole Body and Vascular examinations with superconducting magnet, high performance gradients and digital Radio Frequency System. The vendor should quote the latest model. Any up gradation / new features launched prior to the installation of the equipment should be part of the supply, even if not quoted at the time of submitting the bid. The vendor should quote the highest channel available with them. Please mention the year of launch of quoted model.

The offered model should be USFDA approved. Authentic and legible certificate for the same be annexed.

Sr. No.	Specifications as per tender
1	**MAGNET**
A	3.0T active shielded super conductive magnet should be short and non claustrophobic.
B	It should have at least 70 cm patient bore with flared opening.
C	Magnet length should be less than 200cm.
D	Homogeneity of magnet should be less than 3.5 ppm over 45 cm DSV.(Guaranteed homogeneity) Homogeneity should be maintained in large FOV, fat saturation and applications like cardiac, functional MRI, diffusion tensor imaging and spectroscopy. System with the highest homogeneity to be quoted
E	The magnet should be well ventilated and illuminated with built in 2 way intercom for communication with patient.
F	Cryogen vessel to be of Helium only with appropriate super thermal shielding and refrigeration facility for minimum Helium boils off . It should have a built in cryo-cooler such that helium consumption does not exceed 0.05 lit/ hour.
G	There should be a Helium level monitoring equipment in the magnet and facility for appropriate quick shutdown of the magnet in the event of emergency
H	Active shielding/Fringe field- quote values for 5 Gauss and 1 Gauss line
I	External shielding-external interference shield (sufficient to house the magnet, anesthesia and physiological monitors) should be provided.
2	**SHIM SYSTEM**
A	High performance, highly stable shim system with global and localized automated shimming for high homogeneity magnetic field for imaging and spectroscopy. (3D shimming for volume imaging and CSI).
B	Auto shim should be available to shim the magnet with patient in position
3	**GRADIENT SYSTEM**
A	Actively shielded Gradient system in all x y & z planes.
B	The gradient should be actively shielded with each axis having independently a slew rate of at least 200 T/m/s and peak amplitude of 44mT/m,(higher slew rate and peak amplitude will be preferred). These true slew rates should be available in each axis independently, for overall better duty cycle performance of the gradient.
C	The system should have efficient and adequate Eddy current compensation
D	Effective cooling system for gradient coil and power supply
4	**RF SYSTEM**

A	A fully digital RF system capable of transmitting power of at least 25 kW or more with **(dual)** RF power amplifier. System should be capable of multi transmit with multi amplifier driving/ true shape for better B1 homogeneity. Specify transmitter frequency range (10-86 MHz), it **should have latest or equivalent software as standard.**
B	It should also have at least 32 independent RF receiver channels with each having bandwidth of 1 MHz or more along with necessary hardware to support quadrature ICP array/Matrix coils. The highest receiver channels available / mentioned in the product catalogue with the vendor should be quoted.
C	It should support Parallel acquisition techniques with a factor of 12 or more.
D	Should allow remote selection of coils and / or coil elements
5	**PATIENT TABLE**
A	The table should be fully motorized with computer controlled table movements in: vertical and horizontal directions. Position accuracy should be +/- 1.0 mm or better. Specify the patient load capacity.
B	A CCTV system with LCD display to observe the patient should be provided: Moving table angiography should be possible
C	There should be a hand held or auto alarm for patients.
D	Emergency manual traction of the patient from the table should be possible.
E	Table Technology –Bolus chasing with the automatic/continuous moving table should be offered and should be available with fluoro triggered MR angiography for manual and fast switchover in less than 1 sec for CE-MRA. Latest table technology available with the vendor should be quoted.
F	A second dockable table or trolley with second MR tabletop for higher patient through put and patient comfort should be offered. Only Company make is acceptable. No 3rd party solution is acceptable.
6	**COMPUTER SYSTEM /IMAGE PROCESSOR/ OPERATOR CONSOLE**
A	The main Host computer should have a 19 inches or more high resolution LCD TFT or LED color monitor with 1024 x 1024 matrix display
B	The system should have image storage capacity of 100 GB for at least 200,000 images in 256x256 matrix.
C	Additional storage of 25 terabytes to be offered. It should be possible to transfer the images from this storage to main console or workstations
D	The reconstruction speed should be at least 10,000 images per sec or more for full FOV 256 matrix.
E	The main console should have facility for music system for patient in the magnet room. The system should have DVD/CD/flash drive archiving facility. Supply 5000 DVDs along with the system. The system should be provided with auto DVD writer. It should be possible to record multiple cases on the DVD
F	Two way intercom system for patient communication.
	Patient monitoring devices for ECG, respiratory rate, pulse rate, O2 saturation at console.
G	MRI System should be enabled and networked to RIS / HIS
7	**MEASUREMENT SYSTEM**
A	Largest Field of View should be at least 45 cm in all three axis. Higher FOV will be preferred
B	The measurement matrix should be from 128x128 to 1024x1024.
C	Minimum 2D slice thickness mm should be equal to or less than 0.5mm

D	Minimum 3D slice thickness mm should be equal to or less than 0.1mm
8	**COIL SYSTEM**
A	The main body coil integrated to the magnet must be Quadrature/CP. In addition to this following coils should be quoted
B	Multichannel Head with 15 channel or more for EPI/DTI and fMRI application..
C	Neuro-vascular Coil with 20 or more channels or Head/Neck Coil combined, capable of high resolution neuro-vascular imaging or combination of head and neck coli for similar coverage.
D	Spine Array/Matrix Coils for thoracic and lumbar spine imaging with at least 32 channels acquisition per exam
E	Body Array/Matrix coil with at least 45 cm z axis coverage for imaging of abdomen, with atleast 32 channel Acquisition for body part angiograms and heart. In case one coil cannot provide this coverage then multiple coils should be offered. (the best available body coil with the vendor must be supplied).
F	Suitable surface Coil for Peripheral Angiography application of at least 32 **Channel with coverage of 80 cm or more.**
G	Suitable Knee Coils at least 12 Channels or more.
H	Flex Coil large and small (at least two to be provide).
JI	Small flex coil 8 channel or more for pediatric applications and for neonatal head and neck imaging.
K	Cardiac Coil/suitable/coil combination, 32 channels or more for dedicated cardiac work. (Optional)
L	Suitable coil for carotid plaque imaging should be quoted as standard
M	Total number of coils 10 (ten) excluding the main body coil integrated to the magnet.
N	The coil system should permit coverage of 200 cm.
O	A caddy to be provided for storage of coils.
P	The system should continuously monitor the RF coils used during scanning to detect failure modes. RF coils should not require either set up time or coil tuning; Multi coil connection for up to 2 or more coils simultaneous scanning without patient repositioning i.e. like **TIM4G**/GEM/ **FLEX** stream coil combination should be quoted as standard
Q	**The supplier should quote Coils or their combinations exclusively for 10 applications, the number of coils should be thus mentioned as independent and not be having overlapping applications.**
9	**Application Package**
A	**Data acquisition:**
1.	The system should be capable of 2D and 3D acquisitions in conventional, fast and ultrafast spin echo and gradient echo modes so that real-time online images can be observed if needed. All the sequences that are available with the vendor at the time of delivery should be provided as per their manual.
2.	2D multi-slice imaging should be possible in all planes (axial, sagittal, coronal, oblique and double oblique).
3.	Up to 1024 x 1024 matrix acquisitions preferred for all applications
4.	Half Fourier or other techniques to reduce scan acquisition time while maintaining adequate SNR.
5.	3D volume, multiple contiguous slabs, multiple interleaved and multiple

	overlapping slabs.
6.	Slice thickness in 2D and partition in 3D to be freely selectable.
7.	Dynamic acquisition (serial imaging) with capability to initiate scan sequences either from the magnet panel or from the console.
8.	Dynamic acquisition: number of repeat scans with delay time either identical time interval or selectable.
9.	Auto slice positioning from the localizer images
10.	Maximum-off center positioning both anterior-posterior and lateral direction and should be selectable.
11.	Gating: physiological signals like ECG, pulse, respiratory
12.	External signal triggering (interface for triggering input pulse from external source). The provision should be available at the console also (for fMRI, EEG, etc)
13.	Simultaneous acquisition, processing and display of image data in 2D multi-slice mode.
14.	Selection of voxels from oblique slices should be possible while doing spectroscopy.
15.	Artifact reduction/ imaging enhancement/ image filtering/ image subtraction/ addition/ multiplication/ division techniques:
16.	Flow: 1st and 2nd order flow artifact compensation
17.	Presentation slabs: a number of relocatable saturation bands to be placed either inside or outside the region of interest
18.	Graphic prescription
19.	Fat saturation techniques: frequency selective RF pulses to suppress fat signals in the measured image FOV. ROI selective (regional) fat suppression should also be given.
20.	Magnetization transfer saturation: Off resonance RF pulses to suppress signals from stationary tissue in FOV
21.	Phase contrast capability in 2D and 3D mode: Image intensity correction
22.	Breath hold acquisition
23.	EPI mode
24.	DTI with MDDW or equivalent with a minimum of **12 and selectable upto 32 directions encoding.**
25.	Data acquisition in all three standard planes (axial, sagittal and coronal) and oblique and double oblique planes or more oblique planes.
26.	Higher matrix acquisition capability in single shot EPI. Acquisition time, TR, TE and slice thickness should be clearly mentioned and supported by data sheet reference.
27.	The vendor should offer multi coil acquisition in order to optimize throughput increase and increased effective FOV. Individual acquisition elements of every coil should be mentioned.
B	**Imaging pulse sequences:**
1.	All standard and special pulse sequences available at the time of quote/delivery should be offered and quoted in the bid. Fat suppression for high quality images both inversion recovery and Dixon method/ IDEAL/ 3D Dual Echo/ m-Dixen. The system should acquire motion artifact free images in T2 studies of the brain in restless patients. Dynamic study for pre and post contrast scans and time intensity studies.

2.	The system should be capable of selecting TR and TEs as per requirement in majority of the pulse sequences.
3.	Spin echo (SE): multi-slice single echo, multi-slice multi-echo (8 echo or more), SE with symmetrical and asymmetrical echo intervals and fast spin echo. MT-SE imaging sequence.
4.	Inversion recovery (IR): including short T1 modified IRSE, FLAIR, DIR (Double inversion recovery).
5.	Gradient echo (GE): with transverse gradient/ RF spoiling and transverse gradient rephasing, e.g., GRASE or equivalent etc. 3D gradient echo with shortest TR and TE, free choice of angle selection, while maintaining SNR
6.	Fast sequences
7.	Fast spin echo and GE sequences in 2D and 3D mode with T1,T2 and PD contrast capable of acquiring maximum number of slices with a given TR at minimum TE, echo train should be at least 256 or more in fast spin echo mode
8.	Half Fourier acquisition capabilities should be available with/without diffusion gradients and in combination with fast spin echo
9.	Fast inversion recovery with spin echo
10.	Fast gradiant spin echo IR multi-slice multi-echo mode with maximum ETL. Sequences should incorporate RF focusing to acquire ultra-fast gradient spin echo
11.	Fast gradient echo sequences should incorporate RF spoiling and other technique to acquire images in ultra-fast 2D and 3D modes, gradient echo with ETL of 255 or more.
12.	Fat and water suppressed imaging sequences
13.	EPI optimized sequences (with and without fat supression) with ETL of 255 or more.
14.	For T1, T2, PD imaging, perfusion, regular diffusion values (at least 5b, 3 directions) EPI-FLAIR, EPI-IR, EPI-FLAIR diffusion tensor, EPI-MT-FLAIR, tensor diffusion (atleast 16 b values in minimum 32 directions) and diffusion studies. Suitable artifact/ fat suppression techniques to be incorporated in the sequence to have optimum image quality.
15.	There should be capability of calculating ADC map(isotropic and anisotropy from the regular diffusion and tensor data)
C	**Special application packages:** The vendor must provide their specialized and optimized imaging sequences with post processing packages for (i) neuro, (ii) body, (iii) oncology, (iv) cardiac, (v)Angio, (vi) Ortho, (vii) pediatric and other applications. For example, this includes packages like optional/ premium/ advanced/ application suite/ etc**. Please give details of licences for acquisition post-processing and for special packages quoted for the following applications**
a)	**Neuro Applications**
	Functional Imaging with package for BOLD Imaging and spectroscopic imaging and processing package with paradigm generator (non-goggle based) with large high resolution monitor that can be moved to any part of the exam room. It should be fully integrated with MR console for driving the paradigms. Should have console computer , E prime, microphone, fiber optic cables etc.
i.	Functional Imaging with package for BOLD Imaging and spectroscopic imaging and processing package capable of real-time processing and display of color overlay (in real time) using 32-channel head coil being supplied with the system.

ii.	Complete fMRI solution including audio-visual projection system
iii.	The audio-video projection system should be compatible with offered head coil, and should include all attachments that may be required for complete integration
iv.	The system should be integrated with stimulus presentation/ paradigm generator along with licensed software (like superlab, eprime, presentation, etc.) which is capable of presenting audio-visual, audio, video (multiple formats), etc
v.	The paradigm presentation should be synchronize with the scanner (for starting and ending along with measurements)
vi.	Integration and provision near the console for external trigger (of the sequence) for synchronizing fMRI acquisition with paradigm.
vii.	Provision of serial ports and in the penetration panel for routing SVGA/EEG connections(one each for customer use) fMRI console should have all relevant functions to develop and integrate the paradigm to deliver the paradigm and also to monitor the task being presented. The volume control option should also be available with the operator (at a convenient place at the console).
viii.	Post-processing work station / server with post-processing software and hardware associated, with licenses for processing the BOLD data (with required licensed operating platform required like MATLAB, IDL, etc.)
ix.	The system should have the complete hardware & software for visual simulation with facility for generating all paradigm.
2	Arterial spin labelling- **3D/2D**
3	Perfusion imaging of brain with software for rBV, CBV etc analysis.
4	Susceptibility weighted imaging with phase information SWI/SWIp/ SWAN.
5	Multi Direction DTI with minimum of 32 directions (Complete package including DTI quantification and tractography software). **Prospective motion correction enabled software should be part of standard equipment like 3D PROMO/3D PACE/PMC**. Spinal tractography should also be possible.
6	T2 Relaxometry and volumetric analysis for Hippocampus.
7	3D-T2 weighted Turbo Spin for volumetric acquisition reconstructed in any plane e.g. for lumbar spine and for nerve root analysis
8	High resolution imaging for inner ear. Please specify sequences
9	The system should have facility for flow quantification of CSF aqueduct, spinal canal, vessel flow. Both retrospective and prospective gating should be possible.
10	Whole spine imaging with fusion software.
11	Real time Brain Wave, Pre Acquisition / post processing or Inline BOLD or BOLD Specialist.
12	Sequences such as Double Inversion recovery for "Plaque Imaging' in Carotids to be provided.
	MR ventriculography, cisternography, myelography
b)	**Cardiac applications:**
1.	Advanced Cardiac Applications: VCG gating, Morphology/wall motion; Cine perfusion imaging; Myocardial viability imaging; Arrhythmia rejection techniques, Advanced Cardiac Ventricular Measurement Analysis; Cine Cardiac Tagging Techniques; Coronary artery techniques; real time interactive imaging, 2D/3D fast field echo/balanced/steady state techniques. Myocardial tagging, STIR for cardiac use, stress perfusion, 3D acquisition of whole heart in one breath hold.
2.	Coronary artery techniques, real time interactive imaging, 2D/3D fast field echo/balanced/steady state techniques and evaluation package on workstation.

3.	T1, T2, **T2* imaging.**
c)	**Musculoskeletal:**
1	High resolution imaging for cartilage and musculoskeletal imaging. Parametric MAP be available. dGEMERIC or equivalent, radial imaging for menisci and labrum.
2	Whole body screening imaging studies for metastasis should be possible upto 200 cm without repositioning of the patient.
3	The system should have software package for evaluation of bone marrow.
4.	Metal artifact reduction sequence – MAVRIC/MARS / WARP
d)	**Hepatobiliary and abdominal system.**
1	High resolution Abdominal and Liver imaging in breath hold and free breathing modes with respiratory triggered volume acquisitions with navigation and liver fat quantification software, and spectroscopy.
2	The system should have basic and advanced MRCP packages including free breathing and 3D techniques.
3	Liver FAT quantification software should be quoted as standard.
4	Please quote software for MR Elastography as Standard.
e)	**Vascular Imaging**
1	MR angio Imaging Should have 2D/3D TOF, 2D/3D Phase contrast (with and without gating and magnetization transfer saturation), black blood angiography for cerebral, pulmonary, abdominal and peripheral vessels and TONE, CEMRA, Facilities for high temporal and high resolution 4D angio imaging for time resolved vascular imaging with imaging frame of 40 frames/sec or more.
2	Bolus chasing with automatic and manual triggering from fluoroscopy mode to 3D acquisition mode with moving table facility for whole body application. Specify table movement. Inline subtraction should be available.
3	"Non contrast enhanced" peripheral angiography for arterial flow with Native/ Trance/inhance sequences.
4	Time resolved angiography with contrast kinetics like 4D TRACK/TWIST/ **TRICKS/TRACKS**
5	Fast acquisition and reconstruction approach like KT Blast/mSense &GRAPPA/ ARC & ASSET for phase contrast velocity mapping
6	Perfusion study in organ systems like kidney, brain, heart etc. quantification of rCBF/ rCBV, MTT, etc, with color maps.
g)	**Diffusion Weighted Imaging** with at least b value of 10000 or more.
1	Whole body diffusion weighted imaging with background suppression.
h)	**Spectroscopy:**
1	The system should have the Hydrogen, Single Voxel spectroscopy, Multivoxel, Multislice & Multi-angle 2D, 3D Spectroscopy and Chemical Shift imaging in 2D / 3D. The complete processing / Post processing software including color metabolite maps should be available on main console and on all clients currently. Complete prostate, breast, liver spectroscopy hardware and applications should be provided.
2	Water and lipid suppression in automated sequences.
i)	Productivity improvement Techniques with availability of "Previous Scans" such as Smart Exam/ DOT engine for Brain, Ortho, Spine etc. to be provided as standard. Integrated exam planning should be possible. All filming, viewing and export options should be possible.
10	**WORK STATION**

	Multimodality Client server Architecture-server with three concurrent clients capable of rendering **20000** images at peak performance. Workstation hardware should be industry standards and should be the latest with the vendors, as per their globally launched product catalogue. Please quote separate licenses concurrently available for all 3 clients for all the application quoted.
	A reputed Anti- Virus Solution as well as for all clients, workstations should be in place. The vendor should provide antivirus updated for five years and make sure of the updated antivirus every week (using automatic update with internet facility by the vendor).
A	Both workstations should work concurrently with multimodality client server architecture-server.
i)	Basic and advance post processing software including MIP, MPR, surface reconstruction and volume rendering technique, image fusion, 3D evaluation in all three clients concurrently.
ii)	Advanced post-processing offered applications including FMRI, perfusion quantification, advanced diffusion and DTI on all 3 clients concurrently.
iii)	Advanced cardiac evaluation(EF, Calculation, Wall motions, analysis) including perfusion analysis, processing of 2D/3D CSI data, with color metabolite mapping, quantification of CSF flow data, vascular analysis package **on three clients** concurrently. The clients should display cardiac cine images in movie mode with rapid avi creation.
iv)	Image Fusion software : Image filtering and image fusion software for co-registering MRI/fMRI. Calculation of Diffusion of Diffusion/Perfusion Mismatch. Overlay of perfusion and diffusion maps on anatomic maps and DTI Software for fusion of MRI and DSA. Advanced spine application package for nerve root analysis. Whole Body image fusion (composing)
v)	Each Client to have at least 19 inch LCD TFT 2MB pixel color monitor, with hard disk of at least 120 GB for at least 100,000 image storage in 256 matrix, and 4 GB RAM capacity. Total 3 client hardware and software to be provided.
vi)	Each of the client should enable printing in laser film camera and color printers
11	**SAFETY FEATURES**
	The System should have following safety features
A	The magnet system should include an Emergency Ramp Down unit (ERDU) for fast reduction of the magnetic field with Ramp Down time below 3 minutes.
B	The magnet should have quench bands that contain the fringe fields to a specified value in the event of a magnet quench
C	Real time SAR calculation should be performed by software to ensure that RF power levels comply with regulatory guidelines and are displayed on each image
D	The system shall have manual override of the motor drive for quick removal of the patients from the magnet bore
E	Temperature sensor (built in) for magnet refrigeration efficiency must be provided
12	**DOCUMENTATION**
A	One dry chemistry camera with resolution of 500 dpi or more. It should be digital DICOM 3.0 compliant i. The camera must be able to process up to 100 films/hour (min.) depending on the size ii. The system must deliver its first film within 80 seconds from request iii. The system must have contrast resolution of 16 bits/pixel or more

	iv. The system must have at least three online film sizes, and should be capable to print on any of the 8x10,10x12,11x14,14x14, 14x17 sizes. v. The system must not involve any wet process and must give a dry film in single stage (without any users intervention) functionally vi. Start up time should be less than 10 minutes vii. Easy day light loading viii. The system should be freely configurable by the user, to use any of the above mentioned size
B	The camera must be DICOM compatible. (Attach conformance statement.)
13	**UPS**
A	The UPS system should be provided for complete MRI unit with Chiller and emergency lights and for all accessories mentioned in the tender documents with at least 30 minute back up, preferably 150 kVA or more (specify kVA). Genset of adequate wattage to support the ACs and chiller to be provide. An emergency door or hatch should be provided in RF cabin.
14	**SUITABLE RF ENCLOSURE**
A	RF Cabin: The system should be supplied with the imported RF cabin with RF room shielding, RF Door screen, and interiors for the same should be carried out suitably.
15	**ACCESSORIES**
A	Dual head MRI compatible pressure injector with i. Non- Ferrous, automatic syringe size detection ii. It should be capable of performing single dual phase contrast injections, provides saline flush delivery and allows timed contrast delivery. iii. It should be possible to observe progress of injection and view injection results.
B	Water Chiller for Cold Head I Gradients
C	Patient comfort accessories i.e patient call button, two way communication, music system, head phones, non –magnetic I/V stand, restraint strap, comfort pads, knee support and positioning accessories to be supplied. MR Compatible pulse oximeter should be quoted as standard.
D	Two non-ferromagnetic patient transfer trolleys and two wheel chairs of international make should be provided
E	Coil storage cart/carts capable of storing all the coils offered with the system should be provided
F	Two hand held metal detector should also be supplied
G	Closed circuit CCTV camera at the head side of the patient with viewing panel at the console
16	**Warranty and CMC:**
ii)	Even during the warranty period, the desired uptime of 95% of 365 days (24 hrs basis) will be ensured. In case the down time exceed the 5%limit, extension of the warranty period will be twice the excess downtime period
iii)	Note any Liquid Helium due to quenching or due to any other causes during the warranty period shall be borne by the firm.
L	**POST GAURANTEE ANNUAL COMPREHENSIVE MAINTENANCE CONTRACT (CMC)**
i)	The post -warranty (after 5 years) CMC should be comprehensive and should

	include helium and cold head (repair and /or replacement) + labour + spares for the complete system which includes all the accessories supplied such as UPS, Generator, AC etc with 24 hrs manpower for operations (including all consumables like batteries for UPS, etc) and maintenance for another 5 years .the vendor should provide the cost of manpower separately .the CMC should be quoted in Indian rupees. The price of post warranty 5 years shall be taken for price comparison.
ii)	The desired up-time during post-warranty CMC is 95% of 365 days (24 hr basis) along with the penalty clause that in case exceeds the 5 % limit, extension of the post warranty CMC period by the twice the excess down-time period.
M	**MISCELLANEOUS**
	The model with the best and latest technical features available with vendor should be quoted in tender response with original printed data vendor sheets the sytem should incorporate the feature as per the December 2014 RSNA standard/declaration.
	All product catalogues in original
	When the vendor data sheet disagree with the bid response, clarification should accompany in the form of letter/certificates from the principal in original.
	List of all installation of the system in the country.
	The compliance statement must be filled strictly under headings given in the tender. Each specification corroborated in the compliance statement must give the page number where it is listed in the original technical data sheets along soft copy.

Item No. – 3 Specification of High End Color Doppler System

1.	The system must be top-of-the line, latest and state of the art with fully digital technology to incorporate the facility of 2D, M-Mode, M-mode, color Doppler, 2D/Doppler optimization. Adaptive Doppler/Color, Color power Angio and directional CPA, contrast imaging, PW Doppler, CW Doppler, Real time 3D (4D imaging), 2D Fetal echo, Elastography imaging, panoramic imaging
2.	System must have convex and cardiology transducer with either single crystal technology or purewave technology or matrix for excellent grayscale image quality on difficult to image patients.
3.	System should have dedicated presets for application- Abdominal, Obstetrics & Gynaecology, vascular, paediatric, small parts, MSK, fetal Echo, urology, TDC, interventional radiology
4.	System must be offered with a minimum 19 inch High resolution flat panel Medical grade display monitor with nearly infinite position adjustments.
5.	System must be offered with 4D imaging with quantification software for general imaging, and obstetrics & gynaecology applications
6.	System should have tomographic Ultrasound imaging quantification to analyze multiple parallel slice of a volume data set, Review of 3D/4D, color 3D data sets
7.	System should have at-least three imaging universal active probe ports with electronic switching facility.

8.	System should support multi-frequency/ broad band probes spanning a frequency of 2-16 MHz or even better.
9.	B mode & color mode should be available simultaneously side by side real time display. Digital zoom facility for region of interest in real time and frozen.
10	Image storage facility on in build hard disc or CD/DVD-RW facility should be available. In built hard disk with capacity of 500 GB. System should have extensive image management capability including thumb nail review, Cineloop editing etc.
11.	Auto trace & automatic Doppler calculations should be available in Live & frozen images.
12.	Should have the state of the art Transmit Real time Compound Imaging Technology with Multiple transmitted lines of sight, wherein Multiple Coplanar images from different viewing angles are obtained and combined into a single compound Image at real-time frame rates for improved visualization.
13.	System must be offered with speckle Reduction imaging technology to remove speckles and clutter artifacts
14.	System should be capable of scanning depth of 25cm
15.	System must be offered with a 2D frame rate of at-least 800 frames/second. Acquisition frame rate should be clearly mentioned in the technical quote.
16.	System must be offered with user friendly high resolution user interface touch panel (optional) or intuitive keyboard. User friendliness will be given priority.
17.	System should have THI & should be able to work in combined mode of harmonic imaging and real time compound imaging to get excellent image quality
18.	The system should be upgradable to **Fusion imaging** where CT/MRI/PET images can be fused in real time ultrasound images.
19.	The system should be quoted along Elastography imaging with quantification as standard. Vendors have to mention elastography technology detail (eSie touch/ARFI/strain/equivlant/ ASQ) in the technical quote.
20.	The system should be DICOM ready. System should be connect to the dry chemistry printer available in the department (CR/DR system). Should provide advanced DICOM connectivity to an enterprise data management system or PACS with advance DICOM features : DICOM store, Modality work list, Performed Procedure step and structured Reporting. Please specify the advance DICOM features available on the quoted system
21.	System should have inbuilt thermal printer
22.	**Following probes to be quoted as standard**
22.A	1-5 MHz Convex Transducer with $\pm$ 1 MHz variation accepted for General Imaging, Renal, OB/GYN, abdominal imaging with capabilities of CEUS. Must have Tissue Harmonic Imaging. Transducer element technology to be mentioned (Hanfy

	lens/Matrix array/Single crystal/Pure Wave etc.)
22.B	4-12 MHz Linear Array Transducer with ± 1 MHz variation for entirely covering frequency range accepted ; for Vascular, breast, Musculoskeletal, small parts, elastography imaging.
22.C	2-6 MHz Broadband Mechanical / motorized volume transducer with ± 1 MHz variation accepted for General Imaging, Abdomen, Renal, OB/GYN imaging.
22.D	End fire sector, endo – cavitary transducer of 4 to 10 MHz extended operating frequency range with ± 1 MHz variation accepted, single probe solution for trans – rectal and trans – viginal application.
23	2 KVA online UPS with 15 minutes back-up from reputed manufacturer to be supplied along system

Item No. 4 - Specification for CR System

State of the Art Latest Generation CR System for high resolution Radiography

1. General

Automatic compensation of the under and overexposure – direct printing as well as printing digital communication of images possible dose indication included with images

2. Cassette reader unit

- Imaging plates/hour min. 70 (35 x 43)
  Cassette with imaging plates

  - 35 x 43 cm (14 x 17") - 6
  - 24 x 30 cm (14 x 11") - 6
  - 18 x 24 cm (10 x 12" - 6
  - 8 x 10" - 6

- Image plate resolution :
  - minimum 5 pixel / mm standard
  - upto 10 pixel/mm High resolution
  - 20 pixel / mm for mammography

- Cassette release time : please specify
- Storage size of image information : please specify

Patient cassette identification & terminals

Patient cassette identification should be a separate module for being able to be kept at sdistance sway from Digitlazier /CR reader for identifying the IP cassette.

A) Viewing / Previewing with 21" Monitor CRT – 2 nos.

Remote for viewing of the images and should be separate module having following features

i. Window leveling, printer, rotating, flipping, panning, Zooming, Image post contrast
ii. Should have hospital information system (HIS) connectivity.

Processing Server and workstation with 2 nos 21" Monitor for Centralized patient study Management with facility of processing raw image data of the CR Digitizer / reader
Other feature should include image gray scale reversal, imaging flipping and rotating, image zooming, edge enhancement, Lattitude reduction, image noise reduction, gray scale saturation feedback.

Main dry imager (for film Printing)

The system should be supplied with Dry Imager/ DICOM imager with a spatial resolution of 500 PPI / DPI or more. It should have contrast resolution of 12 bits/pixel or more, it should have minimum three online film printing facility (selectable from following film sizes of 8" x 10" and 10" x 12", 11 x 14", 14" x 17") There should be no involvement of wet chemicals and should have standard multiple film sorter at the out put for sorting the films based on patient name and modality connected.

Interconnectivity :

Interconnectivity between various CR modules should be Ethernet based that is RJ45 connection (10/100 Base T)

Scalability :

The CR system should have scope of adding advnced quality control viewers, workstation, connectivity to any DICOM archive OR image management system (PACS)

UPS :

The equipment should be supplied with UPS of the required rating with at least 30 minutes back up for the whole system

Airconditioner :

Suitable adequate Air-conditioner to be supplied.

Warranty :

The warranty should be for a period of two years from the date of installation of equipment and cassette/ imaging plates. Imaging plates should have warranty of minimum 30000 exposures.
Please also submit CMC charges for a period of 8 years after expiry of warranty.

Training :

Company has to provide on site operational training for radiographers and radiologist for at least seven days.

B. List & specification of equipment for ICUs & ICCUs

Section –A Interior Works of ICU & ICCU

Sno	Item	Quantity	Specification
1	**Anti bacterial painting**	As per Requirement	Anti-Microbial Protection: These product hygiene coatings start the biocidal action as soon as the microorganism land on the surface, and prevents the growth of mould, bacteria and yeasts for at least 5 years. This Hygiene coating are independently tested by leading universities to demonstrate resistance.
2	**Anti static homogenous Flooring**	As per Requirement	Flooring seamless with perfectly curved flash- coving, resistance to mechanical stress and dynamic loads and having ES /EMI(conductive) protection characteristics, 2 mm thick, washable. Conductive flooring with carbon backing total thickness 2.00mm, total weight 3400 g/m2 EN-430 polyurethane reinforced, scratch resistant, chemical resistant , slip resistant, anti fungi & bacterial growth , dimensional stability. **Installation :** The flooring would be installed on a smooth, clean sub floor which should be free from any undulation .A copper strip/mesh should be layer under the tiles, with one earthing point for every 150 sft of area and good quality water based adhesive for fixing as per as manufacturers recommendation.
3	**Curtain Track partition**	As per Requirement	**Cubicle Curtain Track :** It should be made from heavy Duty Aluminium cubicle track size 20mm wide x 30mm high, made of aluminium natural anodized to 15 microns complete with continuous PVC liner, nylon gliders and hooks, plastic end cap, connecting bridge, overlapping joint connector, wall brackets with matching screws to make up cubicle height to 2100mm clearance from floor level at 1000mm spacing and securely fixed to above slab all strictly in accordance with the manufacturer's instruction.
4	**Intravenous Track I V track**	As per Requirement	It should be made from heavy Duty Aluminum Intravenous track 'U' configuration size : 35mm (W) x 19.2mm(H) make of aluminum natural anodized to 15 microns complete with wall brackets with matching screws all strictly in accordance with the manufacturer's instruction 1 no. IV carrier to a set of IV support track

			complete with 5 points Telescopic Bottle holder adjustable 600 mm-900 mm tree

6	**Vertical bed Head Wall Panel**	As per Requirement	It shall be duly CE marked and comply with 93/42/EEC Medical Devices: General & shall have CE No. It shall be constructed from high quality anodized aluminum profiles with a maximum length of 2100 mm length in one Piece with integrated double support rail at both the sides. The Gas Outlets to be fitted as per requirement. It shall have following: 1 No.RJ45 Data Socket + 1 No. RJ 15 Sockets with Frame, 8 Nos. multi-pin 6/16 amp electrical switch +sockets and frame for normal supply. 8Nos. Potential sockets for earthing. It should complete through piping to the central connection point by means of medical grade copper pipes complies to EN 13348 standards
7	**Partition and Space to be provided**		Space should be provided for 1. Store room 2. Staff nurse changing room 3. Fully furnished doctor's duty room with attached bathroom

Section- B – Equipments of ICU & ICCU

1. Multi Parameter Monitor 5 Para

- Screen should have both option touch and optical encoder.
- Should be 12.1" Colour LED display for better visibility.
- Should be 800 x 600 resolutions or better with clear waveform and easy to read numeric values.
- It should have separate internally fitted module for spo2, NIBP, ECG, power to minimize the after sale cost.
- Good resolution or better with clear waveform and easy to read numeric values. Up to 8 real time waveforms should be displayed.
- Both audio and visual alarms for vital signs should be available.
- 16 event recording of alarm conditions should be available and facility to recall with ECG waveform.
- Night mode for patient comfort and to enhance TFT life. (data will not appear on screen but keep on capture and saving on CMS if connected.)
- Special mode for viewing only waveforms up to 7 waveforms should be in monitor.
- Access to 48 hrs. of tabular & graphical trends for all measured values should be available.

- Arrhythmia Analysis should be available with selection facility of ON / OFF and also touch screen.
- Easy to learn and can be uses with single knob to browse through all menus
- Simple and clear direct keys for all-important functions should be available.
- Pacemaker detection should be available.
- Customizable to view only selected parameters & waveforms should be there.
- Minimum 5-7 User can be defined with choice of placing of parameters and waveforms on screen.
- Special mode for viewing parameter values from a distance should be available.
- Extremely flexible multiple user definable settings should be available.
- ST segment and arrhythmia detection and analysis should be available.
- Manual adjustment of voltage or amplitude should be available.
- Provision to adjust Iso electric, J and post J points in medians should be available with 40, 60 and 80 millisecond option for neonate and adult user.
- Networking capability
- Storage of 15 alarms & recall with wave form of ECG.
- Upgradeable to CMS WI-FI.
- Alarm recall with ECG waveform.
- Should be CE approved. Submit the valid CE certificate

TECHNICAL SPECIFICATIONS:

Electrical:

- Internal Battery: 11.1 V, 4.4 AH, Lithium Ion rechargeable.
- Battery Backup : upto 3 hours with minimum 5 minutes NIBP intervals
- Operation: AC/DC operation
- AC mains: 220 V+ 10% AC, 50 Hz, 2 A

ECG/RESPIRATION

- Leads Selection: I, II, III, aVR, aVL, aVF, V in 5 lead configurations.
- Heart Rate Range: 20 to 300 bpm
- Bandwidth Diagnostic: 0.05 to 40 Hz
- Bandwidth Monitoring: .5 to 40 Hz.
- Peacemaker Detection: Indicator on waveform displayed.
- ST Sement Range: From –0.9 to 0.9 mV.
- Defib Protection: Protected against 360-joule discharge and electrostatic potentials.

SPO2

- Saturation Range; 0% to 100%.
- Pulse Rate: 20 bpm to 250 bpm
- Technology should be Nelcore/Masimo or equivalent.

NIBP

- Method: Automatic Oscillometric

MEASUREMENT MODES

- Systolic (Adult/Ped.) : 30 to 250 mmHg.
- Auto: Automatic BP Measurement at 1,2, 3, 5, 10, 20, 30, 60 & 120 minutes.

RESPIRATION

- Technique : Trans-thoracic impedance
- Range : 4 to 150 breath / min

TEMPERATURE

- Range: 0 to 50 °C
- Accuracy: ± 0.1 °C

ENVIRONMENTAL

- Operating Temperature: 5 to 50^0 C
- Operating Humidity: 5 to 95% RH, non-condensing
- Storing Temperature: 0 to 50^0 C

2) ICU Ventilator (Adult and Infant)

CCU Ventilator should be time controlled, volume constant, microprocessor based with facility for complete patient monitoring suitable for pediatrics to adult patient group, having following features:

- 12" color TFT touch screen.
- Variety of modes: VCV, PCV, PSV, NPPV and mix modes like CPAP / PSV with apnea back up ventilation and PRVC.
- Apnea back up ventilation.
- Facility to measure and display three wave forms and P/V & F/V loops with facility for freezing and over laying loops for reference.
- Vol delivery 50 ml to 2000 ml on wards in VCV with compliance compensation for circuit.
- Set up parameters

  Rate 2 – 80 bpm,
  I: E ratio 4:1 to 1:4
  PEEP up to 35 cmH2O,
  Pressure Support: 0 – 60 cmH2O.
  Peak Flow: 10-140 LPM and 180 LPM in NIV Mode.

- Status indicator for ventilation mode battery life, patient data, alarm settings etc.
- With graphics & mechanics including freezing of loops.

- Monitoring of the following parameters : Airway pressure peak and mean, Tidal volume inspired and expired, minute volume inspired and expired, frequency, FiO2, PEEP, Plateau pressure, total leak, RSBI etc. with wide variety of alarms.
- Trending facility for 24 hrs or more along with event log.
- 90-260 Volts AC operating with built in battery for minimum 60 min. back up.
- Built in O2 cell.
- Should have facility for Sigh.
- Should have facility for expiratory and inspiratory hold up to 6 sec.
- The system should have both flow and pressure trigger with a bias flow. It should allow spontaneous breathing in all ventilation modes.
- The patient trigger should be visualized with a different color
- The patient block should be autoclavable and not having any kind of consumable like flow sensor etc.
- Integrated Nebulizer facility with flow compensation.
- Trolley for the ventilator including holder for humidifier and hinged arm for holding the circuit.
- Pressure hose O2 , 3m, ISO standard
- Patient tubing system reusable (Adult)
- The system should have a internal air supply system with min. 5 years warranty not requiring any external air compressor or pipe line system.
- Should be provided with a User manual
- **The unit should be European CE marked to European medical devices directive or USFDA certified**.

3) Defibrillator

- **ECG**

ECG
lead;I,II,III,AVR,AVI,AVF,Vi-V6
S-T SEGMENT ANALYSIS:-2.0-
2.0 MV Arrhythmai analysis:
Yes
Protegtion: with stand 4000 VAC/50 hz Voltage in isolation and work against electrosurgical interence and defibrillation

- **Respiration**

Measurement method: Thoracic impedence
Display:7" Colour LCD

1. Defrillator type : Manual, Synchronized, asynchronized
2. Output waveform : Biphasic technology
3. Energy accuracy : <+-1%

4. Energy selection : 0, 3,5,7,10,20,30,50,100,200,300,360 joule (nominal at a resistance of 50)
5. Charging time : Maximum 8 seconds to 360 joules
6. Standard Adult/Pediatric Paddles : Reusable external adult paddles (Pediatric paddles integrated)

- **Internal Battery Backup**
  1. Battery type : Rechargeable lithium battery
  2. Charging time :Time-minimum of 4 hours for full charging
  3. Battery charging : during AC power supply operation of the device
  4. Charging/Low battery indication :Red Led
  5. Battery capacity :100% of the battery will provide 120 min's of the monitoring; and discharge at 360 joules

- **Power Requirement**
  AC power supply :110V,60 Hz/220V, 50 Hz
  Weight : less than 10 kgs

4) Infusion Pumps

- Infusion Pump with Multicolour LCD Display
- Should have facility for Drop based infusion as well as Volume based infusion.
- Should work using non-dedicated Infusion sets, and there should be facility to calibrate the Infusion sets.
- It should be possible to set the flow directly in ml/h or Drops.
- Occlusion Levels : 3 levels with multi colour display
- Battery Level indicator
- Modes: Rate Mode, Time Mode & Volume Mode
- Flow range
- 1.0ml/h-1200.0ml/h or 1 – 400 drops per minute
- Flow precision ±3% in drop mode
- ±5% in Volume mode
- Purge: > 600ml/h.
- KVO Rate: Flow < 10ml/h, KVO is 1ml/h, Flow >10ml/h KVO is 3ml/h.
- Should have Bolus function.
- Battery Life: more than 8 hours on a single charge.
- Modes: Rate Mode, Time Mode & Volume Mode.
- Accuracy Adjust in Volume Mode
- Volume mode can be operated without drop sensor.
- Should be compatible with Macro & Micro sets
- Should have certification of ISO 9001:2008 and ISO 13485:2003

5) Syringe Pump Specifications

- Bottom front loading Syringe Infusion Pump with Multicolour LCD Display
- Syringe Sizes : 2, 5,10, 20,30 and 50 ml
- Should work using non-dedicated syringes, and there should be facility to calibrate the syringe
- It should be possible to set the flow directly in ml/h and based on Weight , Solution Volume, Drug Mass & Dose, and Target Volume & Time based
- Occlusion Levels : minimum3 levels with multicolour display
- Battery Level indicator with Battery Life of Minimum 8 hours on a single charge
- Syringe pump should not have any visible opening so as not to spill any liquid inside the machine.
- Syringe pump should be stackable, with provision to lock one machine over another.
- Should have automatic KVO Mode
- Should have purge /Bolus function with User selectable Bolus flow Rate.
- Should have Alarms for: Occlusion, Near empty, Empty, Syringe loose, Low battery, End of Infusion.
- Alarm volume should be adjustable.
- Infusion should not start with out properly locking the syringe into the Syringe Block.
- Flow range for Rate Mode: 0.1ml/h-1800.0ml/h (50ml Syringe), step of 0.1ml/h
- 0.1ml/h-800.0ml/h (20ml Syringe), step of 0.1ml/h
- 0.1ml/h-400.0ml/h (10ml Syringe), step of 0.1ml/h
- 0.1ml/h-200.0ml/h (5ml Syringe), step of 0.1ml/h
- 0.1ml/h-100.0 ml/h(2ml Syringe), Step of 0.1ml/h
- Flow precision ±2%
- Time setting Mode range:
- Volume: 0.1-99 ml, Step of 0.1ml
- Time: 1-1999 min Step of 1 min.
- Weight Setting mode range:
- Solution Volume: 0.1-99 ml, Step of 0.1ml
- Drug mass : 0.1-999ml, step of 0.1 ml
- Dose: 0.01 -99.99ug/kg/min, Step of 0.01ug/kg/min
- 0.01-99.99 mg/kg/hr, Step of 0.01mg/kg/hr
- Weight: 0.1 -99.9kg, Step of 0.1 kg, 100-300kg, Step of 1kg
- Target Volume range: 0.1-999.9ml
- Power Supply: 100-240VAC, 50/60Hz,Power consuption less than 25 VA, Weight less

  than 4kg with battery.
- Should have certification of ISO 9001:2008 and ISO 13485:2003

6) Compressor

Standards and Safety

- Sample Reading :As per compliance with ICSH
- (International Committee for the Standardization of Hematology)

- Should be compliant to ISO 13485: Quality systems -
- Medical devices - Particular requirements for the application of ISO 9001
- Applicable to manufacturers and service providers that perform their own design activities.

Instructions

- Compulsory demonstration of equipment with
- Comparative chart in pre-bid meeting.

7) Suction Machine

- Capacity 1/4 Hp
- Twin bottle.
- SS Body

8) ECG Machine Computerized

- 1/2 channel printout format
- 320x240 LCD to display setting
- menu and waveform in 3/(3+2)/6/12 channel
- Rhythm lead with R-R interval histogram and trend graph
- Automatic measurement and interpretation of standard ECG parameters
- Internal memory for storing 30 records
- Built in RS232/USB interface supporting data transmission to PC
- Software to be provided for post-processing of ECG waveform on PC
- Provision to enter patient info of ID, sex, age and weigh
- Input Circuit: Isolated with protection against pacemaking and defibrillation
- Input Impedance: > 50Megaohm
- Input Circuit Current: < 20nA
- Calibrating Voltage: 1mV
- Polarizing Voltage: 300mV
- Sensitivity: 5, 10, 20mm/mV
- Filter: AC: 50Hz (-3dB); EMG: 35-45Hz (-3dB)
- Time Constant: > 3.2s
- Noise Level: < 15mV
- Frequency Response: 0.05-150Hz
- CMRR: > 100dB
- A/D Converter: 12bit
- Printer: Thermal array printer of minimum 150 mm or above.
- Baseline Control: Automatic control
- Rythm lead: Standard 12 lead
- Lead Change: Automatic/Manual
- Safety Level: Class I, Type CF

9) Pulse Oximeter

1. Description of Function

- A pulse oximeter is a medical device that indirectly measures the amount of oxygen in a patient's blood (as opposed to measuring oxygen saturation directly through a blood sample) and changes in blood volume in the skin, producing a photo plethysmograph

2. Operational Requirements

- Suitable for all types of Patient range :Adult, pediatric, infant, and/or neonate

3. Technical Specifications

- Display- LCD, Backlight illuminated
  Parameters and waveform displayed- SpO2, pulse rate, system status, plethysmogram, menus for user settings
- SPO2 range- 0- 100 %
  Accuracy of SPO2- ±2%(70-100% adult pediatric non motion) ±3%(70-100%, neonate, nonmotion)
- Pulse rate range should be 18-300 bpm
  Audiovisual Alarms- High/low SpO2 and pulse rate, sensor off, sensor failure, low battery Alarm range- 50-100%
- Alarm override facility
- Cable length should be minimum 1 metre
- RS 232C Interface for data communication.
- Integrated Printer
- Battery back-up operating time 5 hours.

4. System Configuration Accessories spares and consumables

- System as specified-
- SpO2:Adult SpO2 sensor with cabletwo nos per monitor and Pediatric
- SpO2 sensors- one no. per monitor.

5. Environmental factors

- Shall meet IEC-60601-1-2 :2001(Or Equivalent BIS) General Requirements of Safety for Electromagnetic Compatibility or should comply with 89/366/EEC; EMC-directive.
- The unit shall be capable of being stored continuously in ambient temperature of 0 -50 deg C and relative humidity of 15-90%

6. Power Supply

- Should work on 220-240V AC as well as rechargeable batteries. Mains adaptor to be supplied
- Rechargeable battery operated system. Charger to be provided if integrated charger is
  not there.

7. Standards, Safety and Training

- Should be FDA , CE,UL or BIS approved product
- Manufacturer/Supplier should have ISO certification for quality standards.
- Comprehensive warranty for 2 years and
- 5 years AMC after warranty
- Electrical safety conforms to standards for electrical safety IEC-60601-1 General Requirements.

8. Documentation

- User/Technical/Maintenance manuals to be supplied in English. 8.2 Certificate of calibration and inspection.

10) BP Apparatus Table Model

11) BP Apparatus Stand Model

12) Stethoscope

13) Portable X-Ray Machine

1.	**Radiographic Rating**	40 – 100 KVp .
2.	**Tube Current**	25 mA , 40 mA , 75 ma and 100 mA
3.	**Tube Voltage**	40 – 100 kVp in Steps of 2 kVp
4.	**Timer**	2-300 mAs
5.	**Rectification**	Full Wave rectified .
6.	**X-Ray Tube**	Stationary Anode Tube 2.8 mm x 2.8 mm focal spot .
7.	**Collimator**	Manual Light Beam Diaphragm.
8.	**Movements**	Should have Fully Counter Balanced , Vertical , In and out Angular Travel and Tube Up & Down
9.	**Cassette Box**	Integrated Mobile Stand with Lead Backing
10	**Power Supply**	230 V, 50 Hz. AC
11	**Extension Operating Switch**	With 2-3 meters cable length

- **Equipment should have BIS & CE certified Part I Approved for Mechanical & Electrical Safety .**
- **Equipment should have AERB Approved for Radiation Safety.**
- **Equipment should have Auto programmable for KVp , Technic and mAs can be automatically selected by selecting the Body Part .**
- **Equipment should have Illuminated LCD Display.**
- **Equipment should have wheels for easy movement**
- **Should have Digital meter for Main Line voltage display for accurate exposure.**

14) Portable USG / ECHO Colour Doppler Machine

15) Central Patient Monitoring Station for Six Monitors

Bed Multi Parameter Central Monitoring with Wired System Software

System Software *with following salient features:*

- Windows based system.
- The system should have user friendly touch screen
- Hardware should have licenced Central monitoring system
- 16 bed alignments, with full screen zoom options.
- 4 and 8 seconds online recording and freez frame mode.
- 24 Hours Heart Rate Trend
- 72 hours data storage, retain & reviewal capacity.
- Smart Alarm, Alarm Logging & Alarm queue up facility.
- Remote Monitoring
- Patient's Data remains stored safely even after a Power Failure.
- All the data (Current as well as Stored) can be printed at any on any standard Windows compatible printer.
- Parameters :ECG, SpO2, NIBP, Resp & Temp
- 3.0 GHz / Dual Core processor with CD/DVD RW
- DVD writer
- RAM : 1 GB
- 160 GB Hard Disk (SATA)
- 2 Serial Port
- 2 USB Port
- Optical Scroll Mouse with pad
- UPS of 600 VA
- Speakers
- Windows Licenced User Copy
- 17" (1280 x 1024)High Resolution TFT Monitor
- Black n White Laser Printer
- Suitable Table for Central Station
- Necessary cabling for Central Station will be done by the Hospital

16) Air Conditioning

As per requirements

18) UPS

30 KVA, CPCB Approved, with Air Cooled, AMF Panel, Silent Canopy, Necessary Electric Work, Necessary Concrete Plat form, shed for covering the Generator set

19) Refrigerator

20) ABG (Arteo Blood Gas Machine)

Section -C

Beds & Furniture of ICU & ICCU

1. Patient stretcher with X-Ray translucent.

- Backrest adjustment assisted by hydraulic.
- Foldable side guards, easy and safe handling, solid and hygienic construction, no danger of accidental crushing.
- Chassis and upper part features – smooth and sealed coated plastic sheets for optimal hygienic
- Cleaning and disinfection.
- 20 cm castors with central locking. Fifth castors for easy
- maneuvering.
- Minimum height of 55 cm allows easy use for the patient and hospital staff. High/low,
- trendelenburg/reverse trendelenburg positions.
- Easy adjustment by levers located on both sides. X-Ray translucent backrest.
- Patient belt for fastening. Oxygen tank holder.
- Height adjustable stainless steel IV pole. Washable at 95°, fire retardant, mattress cover.
- Plastic crash bumpers.
- Easy to clean, plastic coating, telescopic pistons. Electrostatic painted metal frame.
- Cleaning with NANO technology.

Height Range	: 55-87 cm
Trendelenburg	: 15°
Reverse Trendelenburg	: 15°
Backrest Angle	: 90°
Overall Length	: 216 cm
Width	: 77 cm
Patient Surface Length	: 195 cm
Patient Surface Width	: 62 cm
Back Section Length	: 73 cm
Castor Diameter	: 20 cm
Weight	: 110 kg
Safe Working Load	: 225 kg

- It should conform to CE or FDA.
- Manufacturer should have ISO certification for quality standards.

1. (a) ICU Beds without Weighing Machine& in built X-Ray on Bed

- The bed should have following features
- □ Should be electrically operated on 220V AC input
- □ Split Side rails with fold away movement with embedded control panel for patient & care giver.
- □ Hi-Low, head, knee break, TR/RTR electrical functions
- □ Auto contour, for optimum positioning, to evenly distribute patient weight and to help prevent patient from sliding towards foot end of the bed.
- □ Should have Retractable back rest (10cm) & knee break (6cm) for better patient pressure relief
- □ Under Bed Light/Night light
- □ One button boost function for easy repositioning of patient.
- □ Chair position for dining & siting patient.
- □ One step head board removal for easy access to patient's head
- □ ABS head and foot boards with push handles & angle indicator
- □ Non powered instant CPR (Quick release) & Electric CPR (mattress platform become flat & goes to minimum height for better patient access)
- □ 15° Trend and 15° reverse trend for emergency situations with angle indicator.
- □ Split side rails with embedded patient controls and hand held attendant/nurse control panel at foot end.
- □ Satellite Nurse functions at foot-end for locking patient controls.
- □ Electric function lockout controls at nurse control
- □ Safe working load of 250 Kg.
- □ 15 cm bed extension
- □ Central break mechanism with TENTE casters
- □ Battery back up function
- □ Corner roller bumpers
- □ Four position IV pole mounts
- □ To be supplied with pressure reduction /shear reduction Foam mattress with laser groove cut and IV Pole
- □ Should have European CE / USFDA

1 (b) ICU Beds with Weighing Machine& in built X-Ray on Bed

- The bed should have following features
- □ Should be electrically operated on 220V AC input
- □ Split Side rails with fold away movement with embedded control panel for patient & care giver.
- □ Hi-Low, head, knee break, TR/RTR electrical functions
- □ Auto contour, for optimum positioning, to evenly distribute patient weight and to help prevent patient from sliding towards foot end of the bed.
- □ Should have Retractable back rest (10cm) & knee break (6cm) for better patient pressure relief

- Under Bed Light/Night light
- One button boost function for easy repositioning of patient.
- Chair position for dining & siting patient.
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- Electric function lockout controls at nurse control
- Safe working load of 250 Kg.
- 15 cm bed extension
- Central break mechanism with TENTE casters
- Battery back up function
- Corner roller bumpers
- Four position IV pole mounts
- To be supplied with pressure reduction /shear reduction Foam mattress with laser groove cut and IV Pole.
- The Structure of the Bed should be on Column Based Design
- The Bed Shall have in-built integrated weighing scale system (independent of Bed Position) displaying values in differential and absolute form.
- Bed Exit Alarms.
- The Bed Shall have X-ray Cassette Holder
- Should have European CE / USFDA

2. Bed side locker

Bed side cabinet made out of ABS Material with making colour with beds of size Size 480x480x820mm with Standard Device & 2 pcs towel stands ,4 Pcs oddment hooks1 , pc1 water bottle stand, Optional choose: 4pcs 2" castors

3. Over Bed Table

4. Medical Records

5. Medical Screen

6. Mattress

- Cover : Water-proof cloth
- Interior : Machine-pressed palm and hing density sponge
- Thickness : 70mm
- Color :dark blue

7. One step Footstool

8. Crash Cart cum Medicine trolley

- Size : 850x520x1010mm
- Material : aluminum-alloy, ABS and stainless steel .
- Including 5 layers of drawers,2 small size(70mm in height),2 medium size(140mm in height)and 1 large size(210mm in height)
- Drawers mainly consist of top panel board,frame and plastic medicine tray(adjustable);
- Other components :2 litter buckers,1 syringe disposal,1 adjustable board,1 transparent file box,1 oxygen cylinder holder,1 power oulet,1 instrument holder and 1 I.V.Pole

10. Record Clip Trolley

- Single –Copy Medical Record Cart Structure and Configuration
- All stainless steel and ABS structure with silent wheels, locks and drawers
- Specifications :25 Shelves (piece) Size: L405xW405xH1015mm

11. Kick bucket, Transfer stretcher, Trolleys, stands, Over bed table, Medical screen etc. and all miscellaneous appliances required in CCU

(As per industry standards) Items will be supplied only after acceptance and approval from the purchaser.

C. Technical specification for Modular OT

C. (i) Imported, True-Modular, Pre-fabricated Operating Theatres

Essential Requirements

Modular theatres should be offered on turnkey basis including Design, fabrication, installation, testing & commissioning of all items mentioned in the BOQ attached. It should be free-standing structure which allows easy repair, maintenance & future expandability.

The MOT shall comprise of the following:

The free standing substructure, SS wall panelling system, SS panelling ceiling system, laminar air flow system, exhaust Air Cabinet, storage cabinets, , various doors , illumination peripheral lights, Control Panel, Pass through Cabinet, X-ray viewing screens, scrub stations.

Technical Specifications:

1. **Wall System:**

   a) **Sub-structure (Imported):**

   All the Operating Theatres shall be fully pre-fabricated and truly modular in design:-

   These shall have self supporting, free standing substructure without the need for any brick walls except the bounding (outer) walls of the main building. The substructure shall be made of GI of minimum 1.5mm sheet thickness.

   The substructure shall be firmly fixed onto the floor, slab/ceiling RCC with high quality fasteners.

   The depth of the substructure shall vary at different locations to allow ample space to accommodate various components / equipments to be installed inside it.

   Substructure shall have additional horizontal support (mounting bracket) for medical gases outlets, x-ray viewer, monitors etc.

   b) **Wall Panels (Imported):**

   The substructure shall be covered with the wall cover panels made of High Pressure Laminate (HPL). It should be non-combustible fibre cement panels with laminate coating. Fibre cement panel should be having approx. 11 mm thickness with fire grade classification acc. to DIN EN 13501-1. Laminate overlay should be minimum approx. 0.8 mm on both panel sides. The Total thickness including impact overlay should not be less than 11.0 mm

   All the cover panels, components of the structural material shall be totally prefabricated from the factory itself and no process like welding; grinding shall be carried out at site.

   Front side colour of the wall Panels shall be according to choice to colour chart available for Impact laminate and back side should be white colour from the factory itself and no painting job shall be carried out at site.

Wall and ceiling panels shall be easily openable /closable for quick resumption of operations after repair/maintenance and for future expansion and up-gradation. The wall panels on both sides of the substructure shall be openable except where there is an unavoidable brick / RCC structure.

The wall panels shall be firmly fixed on the substructure with the help of screws. The vertical joints between two wall panels shall not be more than 10 mm wide. Full height silicon rubber seal of Medical Grade shall be used to fill the gap between two wall panels to ensure a 100% hermetically sealed vertical, flush with wall panels mounted joint.

Wall panels shall be one-piece panels up to the suspended ceiling. The Standard size should be Height x Width: 2950 mm x 1200 mm however exact sizes acc. to the room details, incl. joint profile and fastening parts.

The Wall panels shall have certification for hygiene and for sterility from a reputed third party. The Wall Panels shall be having fire grade classification in accordance with EN standards.

2. <u>Ceiling System (Imported):</u>

The substructure of the ceiling panel shall have bracing of load bearing sections and cross bracings shall form a rigid grillage to take care the load of ceiling panels. There shall be vertical hangers with a vertical height adjustment according to the site requirements. The vertical hangers shall be fixed to the concrete ceiling by means of metal dowels. All components of the substructure are made of GI.

The Ceiling panels shall be made of Stainless steel (Material-Nr. 1.4301, SS 304 grade) of thickness not less than 1.0 mm. No other material shall be used for this purpose. The standard panel shall have modular grid size of 600mm x 1200mm or 600mm x 600mm. Coating of the Ceiling Panel shall be not less than 40 micron with 180°C stove enamelling and the colour RAL 9010, Off-white or powder coated. The ceiling panels shall be secured by means of clip system and punched-in-knobs shall keep the panels in place and shall ensure an exact ceiling level. The panels are openable for future repair / maintenance & up-gradation.

3. <u>Flooring :</u>

The flooring inside the OT shall have 2mm Static dissipative PVC tiles laid on a semi conductive adhesive base. Flooring shall fulfil EN 649 / SS-T-312B of EU or equivalent requirements and have chemical resistance as per EN 423/DIN 51958 or equivalent and electrical resistance conforming to EN 1081/IEC 61340 or equivalent.

All floor joints shall be welded with adequate coving and a (skirting) level of 100mm shall be achieved on the wall. It shall be provided with self-levelling compound and copper grounding strips of 0.05mm thickness & 50 mm width.

4. <u>Laminar Air Flow Ceiling:</u>

The system shall be supplied together with an advanced Vertical Laminar Air Flow ceiling system only. The laminar box size should not be less than 2400mm x 2400mm and discharge velocity between 0.20m/s to 0.28m/s or an average velocity should be 0.24 m/s.

The laminar air flow ceiling shall have horizontally placed HEPA Filters of H14 grade, EN 1822 standard. The HEPA filters should have efficiency of 99.995%. It shall have high quality sealing system to prevent leakages from sides of filter gaskets, filter frame and pressure frame. The laminar shall have metal sheet diffuser with round holes.

The laminar air flow system shall comply with internationally accepted standards & meet with ISO Class 5 requirements.

The laminar air flow system shall have three or four (as per site availability) exhausts in each OT and the exhaust of contaminated air shall be carried out both from the top as well as from the bottom.

5. Exhaust Air Grille (Imported):

Exhaust Air Grilles made of SS material shall be provided 3-4 nos. in corner panels of each OT. These exhaust grills shall exhaust contaminated air both from top & bottom sides and these grilles should be openable type (not with screws) from the front for routine / periodic cleaning.

6. Over Flow Port (Imported):

Over Flow Port to be provided in theatre and will be strategically placed so as to enable the extra air to flow out of the theatre to maintain the desirable constant pressure

7. Built-in Storage Cabinets (Imported):

Each OT shall have a Storage Cabinet of face dimension 1200mm (width) x 2100 mm (Height) and depth shall be minimum 250 mm which may increase upto 350mm depending upon availability of space. The storage cabinet shall be made of SS specification, same as used for wall panel, except that the thickness of the sheet shall be 1.25 mm instead of 1.0 mm. The door panel of the cabinet shall be in Stainless steel & partly in tempered glass.

8. Automatic Doors (Imported):

Automatic Sliding Doors shall be provided at the main entry to the OT & for entry from the scrub station to the OT.

All doors & door frames shall be made of stainless steel Material-Nr. 1.4301, SS 304 grade only. The thickness of SS sheet used for door frame & door panel surfaces shall not be less than 1.5mm. There shall not be any visible screws or similar other uneven surfaces on the door panel. All Automatic & manual doors should have sturdy SS door handles on both sides. A lock shall be provided on each door.

All doors shall have vision panels (viewing window) at least 400mm x 600mm. The vision panels shall have automatic (motorized) venetian blinds inside fully sealed & sandwiched pair of glass panels. The control of tilt/up/down of venetian blinds shall be available on Central Control panel.

Automatic doors shall have potential equalization (earthing) as per VDE 0107 or equivalent guaranteed by a sliding contact. Its automation unit shall be short-circuit proof and shall have an integrated power supply unit 200-240V, 50-60 Hz, 24V~/2A and shall comply with ISO 9001 and CE requirements.

The automatic doors shall have a vertically placed, uniformly conductive push strip of minimum 1.0 mt height on both sides of the door for operation by elbow, foot or knee for entry / exit. There shall be separate entry push buttons for OT staff, trolley, cleaning purposes as per different opening requirements during surgery, pre-post surgery & non-operating hours.

9. Central Control Panel (Imported) :

An advanced Central Control panel shall be provided in each OT.
It shall have following features:

a) Display & control for Temp & humidity.
b) Control of Venetian blinds in windows & doors.
c) Status Indication of upto 4 Medical Gases + 1 Vacuum.
d) On/Off and regulation of Intensity of illumination in OT.
e) Digital Display of Elapsed time
f) Integrated Telephone / Intercom with speaker & microphone.
g) It shall be Microprocessor controlled
h) It shall have a Liquid Crystal Text Backlit display with 4 lines of 20 characters each.
i) It shall have five illuminated buttons for Test, acknowledge, scroll, text & Menu.
j) It shall have audio-visual alarms.
k) It shall also have Normal, Warning & Alarm LED indications.
l) It shall have Interface and be programmable with PC through USB port or RS 485 (BMS bus).
m) It should comply with DIN EN 60601-1 standards.

10. OT & Other Area Illumination Lights (Imported):

Sufficient illumination shall be provided in each area of the OTs by providing at least 6 nos. of IP-65 grade T16-lights, with dimming (intensity) control, each light having 3 fluorescent tubes of 80 watts each. There should be atleast 800 Lux illumination above 1 mtr. floor level around the OT table.

The light fixture shall be hermetically sealed from top side (ceiling side) and should have bottom opening for repair & maintenance. The light diffuser shall have magnetic locking with the frame and there shall be no screws visible from the bottom.

11. Conventional X-ray Viewing System:

Each OT shall be supplied with a conventional X-Ray Viewing Screen.

Conventional X-Ray viewing screen for diagnostic use with flicker-free light and variable control range of luminous intensity, the illumination should either use either CFL or LED. The front light diffuser should diffuse light equally throughout.

12. Scrub Station:

2 sink (2 Bay) scrub stations should be provided as per BOQ.

The scrub station shall be made of stainless steel SS 304 grade with minimum 1.0mm thickness.

Each sink should have tap operated with sensor. There should be automatic mixer for hot & cold water through a temperature regulator. In addition it should have pre-set time operation.

13. Writing List Board

The writing unit shall comprise of flush mounted 1.5 mm thick, white laminate board, bonded to a 40 mm high density fireboard sheet for additional rigidity. The unit shall be opened to create a wall mounted writing surface within the operating room. The white board shall be constructed from 1.6 mm thick, white laminate board.

14. Hatch Box

The Hatch Box should be provided in each operation theatre to remove waste materials from the operation theatre to dirty Linen area just adjacent to Operation Theatre. Each Hatch should be equipped with two doors and the door should be opened one at a time. The Hatch should be designed in such a way that only one door should be opened at one time. The UV light should be so installed that it is kept on while both the doors are closed, this UV light has to be automatically turned off in case of opening of either of the doors. There shall be indicators on both side of OT so that door open/close status can be monitored from both ends

15. Surgeon's Double Arm Pendant (Imported):

The Pendant shall conform to EN ISO 11197:2005, EN ISO 9001:2000, EN ISO 13485:2003 and Appendix II of guideline 93/42/EWG for Medical products.

One swivel Arm of the pendant shall be 800mm in length and other arm shall be 600mm in length. Both arms shall have pneumatic brakes and shall have swivelling angle of 330 deg. Both Arms shall have horizontal movement only. Arms should be made of Aluminium with high quality powder coating on them.

The pendant system shall be provided with a column 1000mm long with swivelling angle of 330 deg and shall have friction brake. It shall have two consoles with three sided equipment rail and out of which one console shall have control of pneumatic arms. It shall have 8 electrical sockets (in two circuits), each socket of 6/16Amps, of reputed Indian make. It shall have internal flexible gas piping and hose connections for 6 Gas Outlets (O2-2, Air4-1, Air7-1, Vac-2). It shall have 1 RJ 45, 1 RS 232 terminal complete with internal low voltage wiring. Gas outlets - pendant mounting type- shall be provided by MGPS supplier.

16. Anaesthetist's Double Arm Pendant (Imported):

The Pendant shall conform to EN ISO 11197:2005, EN ISO 9001:2000, EN ISO 13485:2003 and Appendix II of guideline 93/42/EWG for Medical products.

One swivel Arm of the pendant shall be 800mm in length and other arm shall be 600mm in length. Both arms shall have pneumatic brakes and shall have swivelling angle of 330 deg. Both Arms shall have horizontal movement only. Arms should be made of Aluminium with high quality powder coating on them.

The pendant system shall be provided with a column 1000mm long with swivelling angle of 330 deg and shall have friction brake. It shall have two consoles with three sided equipment rail and out of which one console shall have control of pneumatic arms. It shall have 8 electrical sockets (in two circuits), each socket of 6/16Amps, of reputed Indian make. It shall have internal flexible gas piping and hose connections for 8 Gas Outlets (O2-2, N2o-2, Air4-1, AGS-1, Vac-2).

It shall have 1 RJ 45, 1 RS 232 terminal complete with internal low voltage wiring. It shall have an Infusion Management System which will have two vertical tubes, each 30mm dia, 1000 mm long, for mounting of Infusion / syringe pumps. The tubes shall have bottle cross holder at the top to hang 4 nos. IV bottles. Gas outlets - pendant mounting type- shall be provided by MGPS supplier.

17. Electrical Work Inside the OT

All high voltage equipment is installed in a separate enclosure. The remote cabinet houses the operating lamp transformers main failure relays, electrical for all circuits within the operating theatre. All internal wiring is terminated in connectors with screw and clamp & spring connections of the clip on type mounted, on a DIN rail labeled with indelible proprietary labels. Individual house or miniature circuit breakers protect all internal circuits with 5/16 amp switch Sockets for Modular Operation Theater.

18. Medical Gas Pipeline work inside the OT

The Medical Gas Pipeline inside the OT shall provide Valve box for 5 gases (O2, CO2, N20, Vaccum, Surgical Air-7 Bar) outside each OT and shall bring the Medical Gas Pipeline inside the OT till ceiling pendants and provide NIST connections for each gas pipeline as per EN 737 / HTM standards or equivalent. Pendants shall connect flexible hose piping with Medical Gas Piping by means of NIST connections.

The Gas piping used for transportation should be as EN 13348 / EN 1057 standards with copper fittings as per EN 1254 standards. The outlets fitted for all the 5 gases in the pendants shall in conformity of HTM standards. Other Accessories of Medical Gas Pipeline like Ward Vaccum Unit having 600 ml autoclavale at 121 degree centigrate collection jar and Theatre Suction Trolley having 2000 ml (2 Nos.) autoclavable at 121 degree centigrade to be provided in each OT.

C - (II) TECHNICAL SPECIFICATIONS OF INDIGENOUS MODULAR OPERATION THEATER

1. Pre-fabricated Walls & Ceiling Panel

Pre-fabricated modular construction shall be designed and constructed for exact size. The prefabricated Operating Room will be free standing structure from composite free standing insulated steel wall panels. The wall will be constructed using 1.0mm SS-304 sheet panel in the front panels & 0.8 mm SS-304 at the back panel. The core between two panels will consist of rigid polyurethane foam, which has been injected under high pressure, with a minimum density of 40 kg/m3. The individual wall panels shall use the tongue and groove technology for joining two panels, no welding will be allowed. The gaps between panels shall be suitably filled with metal filler/epoxy and sanded flush.

The external walls of the room are constructed with solid brick and mortar and in hospital scope of work. The inner surface walls shall be fixed to the brick wall with essential supports. There shall be minimum possible cavity / gap in between the solid and steel walls. The total distance between inside and outside surfaces of OR shall be variable to suit architects' layout, but shall be sufficient for flush mounting of the equipments. The cavity between inner and outer walls shall be left with minimum obstructions for possible addition of equipment at a later date and to enable services, pipes, conduits etc, to be run within the cavity. All wall-mounted equipment shall be flush mounted and sealed into theatre. The wall panel design and construction shall allow for installation and support of all equipment and provision of openings required for the installations, without affecting rigidity and strength. Access boxes shall be fitted to the rear of all the wall-mounted equipments to enable maintenance to be carried out from outside operating room. All the sharp edges and corners shall be smoothened to avoid bacterial contamination.

2. Anti Bacterial / Anti Fungal Paint

The internal surfaces of the SS-304 OT walls should be sprayed with water based, non – reflective liquid plastic, to a color approved be the architect a minimum dry film thickness of 300microns. These plastic coatings should overlap the floor covering, ceiling system and door frames by 25mm to provide a continuous sealed surface. Sterile Coating applied should be water resistant, does not support bacteriological or fungicidal growth and is resistant to most chemicals commonly used in hospital departments. The sterile coating should remains unaffected by radiation and other ionizing radiation at levels in excess of 1000 mrad and is classified to class I when tested in accordance with the requirements specified under BS.476: Part 7 1971,Surface spread of flame Test for Materials. The coating system should be easily maintained and can withstand repeated cleaning with alkaline detergents, antiseptics and fumigation agents without any degradation to the surface finish or performance.

3. Laminar Air Flow Ceiling

Each modular OT shall have Plan Air Ceiling. The Plan Air ceiling shall be constructed out of 2mm thick extruded aluminum sheet of size 2400x2400 mm having six Nos. HEPA filters with spot efficiency of 99.99% 0.3 micron. It should give 3500 CFM pressure. Air and light diffuser made of two layer of mono filament precision woven polyester for plan air ceiling to give a laminar flow of filtered air. It shall also provide a shadow less lighting system with control on. The intensity of luminance by using high efficiency electronic fluorescent tubes. All HEPA filters shall be factory tested and certified in accordance with international standards. All ceiling shall include integral lighting and composite air / light diffuser. Air shall be diffused into the theater uniformly over the total area. The laminar flow ceiling should also have illumination across its total area

4. Automatic Hermetically Sealing Door

Automatic door shall be provided at the main entry of the OT. Doorframes shall be made of aluminum extrusion profile to carry any door weight. The core door size is of 60 mm size built of high density polytherane puff (density 40 kg/m3) of 52 mm and 4 mm consist of Solid Stainless Steel (SS-304) on both side of the door. Door blade is made with 3-tier specially designed 3 side heavy duty replaceable EPDM gasket against wall frame. Bottom sealing with 2-tier heavy duty EPDM gasket to flush with finished floor. Stainless Steel lever handle on both side of the door blade for smooth and easy door opening and closing. The thickness of aluminum extrusion for doorframe & door panel surfaces shall not less than 1.5mm. There shall not be any visible screws or similar other uneven surfaces on the door panel. A lock shall be provided. Door shall have vision panels (viewing window) at least 300mm x 300mm.

Automation of the door has Digital Controller, Motor and suitable switches to open the door thru hands, foots etc. The door size shall be as per BOQ.

5. Surgeon Control Panel

The control panel will be user friendly and operation and maintenance will be easy. The control panel shall be "Tiled Membrane" type; can be configured to incorporate all the services that operating theatre staff required. The fascia shall be made with superior quality UV resistance membrane with sterilisable feature. The membrane backing is made of 2.5mm thick aluminium that

is rust resistance. The connection between the surgeon control panel and the distribution board will be by a multiplexed system. The panel will contain 6 services tiles for:

a. Time day clock
b. Time elapsed clock
c. Temperature / humidity indicator.
d. General Lighting System
e. Medical Gas Alarm Panel
f. Hand Free set.

6. LED Twin Plate X-ray Viewer

The operation theatre shall be equipped with a X-ray Viewing LED Screen, designed to provide a high level of control luminance without flicker. It shall be equipped with loaded clips to secure the X-ray negatives when in use.

7. Pressure Relief Dampers

Pressure relief dampers to be provided in theater to prevent cross contamination of air from clean and dirty areas. Suitably sized air pressure relief damper will be strategically placed, enable differential room pressure to be maintained and ensure that when doors are opened between clean and dirty area. Counter weight balancing system will be provided in the PRD to maintain positive pressure inside the operation theatre. Air pressure stabilizers will have unique capability of controlling differential pressure to close tolerance. The PRD will remain closed at pressure below the set pressure and will open fully at pressure only fractionally above the threshold pressure. The body will be epoxy powder coated as per standard BS colors and meets international quality and safety requirements. First class electrolyzed steel plate will be used for body and with high-grade SS 304 Stainless steel for blades.

8. Anti-Static Flooring

Flooring (Static conductive tiles): The floor finish in the operating room will be imported 2mm statics conductive PVC tiles, laid on a semi conductive adhesive base. The floor finish will terminate at the room perimeter passing over a concealed cove former and continuing up the wall for 100 mm., Flooring will fulfill EN. It will have chemical resistance as per EN 423. It will have electrical resistance conforming to EN 1081/IEC 613404-1. All joints will be welded and the plastic wall finish will overlap the floor coving by 25mm, to provide a continuous sealed surface. The self-leveling compound will be of the type that does not promote bacteriological growth. Copper grounding strips (0.05mm thick, 50mm wide) will be laid flat on the floor in the conductive adhesive and connect to copper wire of grounding.

9. Storage Cabinets

Providing, Fixing, Supply and Installation of storage unit will be made with the wall cladding material i.e SS-304. The unit will be divided into 2 equal parts and each part will have individual glass doors with locking system. Each part will have glass racks to keep surgical medicines etc.

10. 2 - bay Scrub Sink

Compact Surgical Scrub sink will be designed for use in Operation theatre complex providing surgeons with a convenient sink for pre op scrub up. Each fixture will be fabricated from heavy gauge type 304stainless steel & will be seamless welded construction polished to a satin finish. The scrub sink will be provided with a front access panel, which will be easily removed for access to the water control valve, waste connections, stoppers & strainers. Hands free Operation will include infrared sensor with built in range of adjustment. Thermostatic Mixing Valve control will be located behind the access panel & maintain constant water temperature. User defined settings of 1 to 3 min are available. This timing will be adjustable to meet individual application requirement, provided with infrared sensor thermostatic controlled taps with fail-safe Temperature controls.

11. Writing List Board

The writing unit shall comprise of flush mounted 1.5 mm thick, white laminate board, bonded to a 40 mm high density fireboard sheet for additional rigidity. The unit shall be opened to create a wall mounted writing surface within the operating room. The white board shall be constructed from 1.6 mm thick, white laminate board.

12. Peripheral Lights

Eight sets of double peripheral lights shall be with stepped finish aluminum with reflectors. Peripheral lights shall be clean room compatible. Rating of peripheral lighting shall be IP 54. Control equipment for the peripheral lighting shall be provided in the theatre control panel to allow independent control of the lighting levels by the surgical team. Recessed mounted bottom opening of 2 x 36watt.

13. Hatch Box

The Hatch Box should be provided in each operation theatre to remove waste materials from the operation theatre to dirty Linen area just adjacent to Operation Theatre. Each Hatch should be equipped with two doors and the door should be opened one at a time. The Hatch should be designed in such a way that only one door should be opened at one time. The UV light should be so installed that it is kept on while both the doors are closed, this UV light has to be automatically turned off in case of opening of either of the doors. There shall be indicators on both side of OT so that door open/close status can be monitored from both ends

14. Surgeon's Double Arm Pendant (CE Marked):

Pendant should be Double arm(1000mm+800mm) with load carrying capacity of 80 kg. The arm should rotated upto 330º- 340ºwith adjustable stopper. Dampened stoppers and very low hand forces for horizontal movements should contribute to an ergonomically optimised workplace. The large interior cross section for supply lines offers should completely new applications with 120 mm diameter. The stoppers should be infinitely variable from 0-330º-340º service head should be provided with the modular design to achieve maximum supply with minimum required space. Service head should designed to host, Base, Gas Module, Electric Module and shelves Upto 8 Gas outlets & 10 Electrical switches. Racks & shelves should be provided to mount the equipments like monitor etc. The total length of the manager should be 800mm. Surgeon pendent should be have 2 arms with shelves as per following details:

a. Horizontal arm system - 2
b. Weight carrying capacity - 80 Kg
c. 5/15 Amp. Electrical sockets without switches - 8 to 10 Nos.
d. Shelfs with side rails - 2 Nos.
e. Provision to fix Gas outlets(i.e.) Oxygen- 2, Vaccum- 2, Air 4 bar-1, Air 7 Bar-1.,CO2-1 , AGSS-1
f. Ceiling mounting system for interin ceiling upto 1000 - 1
g. Ceiling cover for interin ceiling - 1

15. Anaesthetist's Single Arm Pendant (CE Marked):

Pendant should be Single arm(900mm) with load carrying capacity of 80 kg. Dampened stoppers and very low hand forces for horizontal movements should contribute to an ergonomically optimised workplace. The large interior cross section for supply lines offers should completely new applications with 120 mm diameter. The stoppers should be infinitely variable from 0-330º-340º service head should be provided with the modular design to achieve maximum supply with minimum required space.service head should designed to host, Base, Gas Module, Electric Module and shelves . Upto 8 Gas outlets & 10 Electrical switches. Racks & shelves should be provided to mount the equipments like monitor etc. The total length of the manager should be 800mm. Anaesthesia pendent should be have 1 arms with shelves as per following details:

a. Horizontal arm system - 1
b. Weight carrying capacity - 80kg
c. 5/15 Amp. Electrical sockets without switches - 8 to 10 Nos.
d.Shelfs with side rails - 2 Nos.
e.Provision to fix Gas outlets(i.e.) Oxygen- 2, Vaccum- 2, Air 4 bar-1, N2O -1
f.Ceiling mounting system for interin ceiling upto 1000 - 1
g. Ceiling cover for interin ceiling - 1

16. Electrical Work Inside the OT

All high voltage equipment is installed in a separate enclosure. The remote cabinet houses the operating lamp transformers main failure relays, electrical for all circuits within the operating theatre. All internal wiring is terminated in connectors with screw and clamp & spring connections of the clip on type mounted, on a DIN rail labeled with indelible proprietary labels. Individual house or miniature circuit breakers protect all internal circuits with 5/16 amp switch Sockets for Modular Operation Theater.

17. Medical Gas Pipeline work inside the OT

The Medical Gas Pipeline inside the OT shall provide Valve box for 5 gases (O2, CO2, N20, Vaccum, Surgical Air-7 Bar) outside each OT and shall bring the Medical Gas Pipeline inside the OT till ceiling pendants and provide NIST connections for each gas pipeline as per EN 737 / HTM standards or equivalent. Pendants shall connect flexible hose piping with Medical Gas Piping by means of NIST connections.

The Gas piping used for transportation should be as EN 13348 / EN 1057 standards with copper fittings as per EN 1254 standards. The outlets fitted for all the 5 gases in the pendants shall in conformity of HTM standards. Other Accessories of Medical Gas Pipeline like Ward Vaccum Unit having 600 ml autoclavale at 121 degree centigrate collection jar and Theatre Suction Trolley having 2000 ml (2 Nos.) autoclavable at 121 degree centigrade to be provided in each OT.

D. Specification for Biomedical Waste grade Autoclave, Microwave & Shredder etc.

Specification for Autoclave combined with Shredder Capacity 300 Ltrs.

System should be non burn technology. It should be steam sterilization method integrated with a shredder. Process should be in one continuous automated cycle with no use of conveyor belts for transporting waste toa separate shredder. The unit should not use any chemicals

Single machine with usable sterilization chamber volume of minimum 300 ltrs or two chambers with usable sterilization chamber volume of minimum 150 ltrs that could work simultaneously or separately. Total capacity of machine to be 300 ltrs.

Should have a capacity to treat minimum 80 kg/hr.
The waste should be able to be loaded in the chamber by a single person without help. No stailrs or lift should be used for suing the machine at any time.
Should have mechanism for shifting of chamber from stationary to any direction for ease of loading & unloading.
West should be removed from the vessel automatically.
Should have AUTO SWITCH OFF for safety.
Should have safety system which should prevent the cycle to start, if the door is open.
The vessel should be built of sturdy material like SS 316L or better quality.
Shredder blades should be of Carbon steel material
Shredder mechanism should be in a manner to optimize full chamber volume.
Each cycle time should not take more than 35 minutes.
System should be able to sterilize and shred simultaneously.
The system should have separate cycle withy no shredding option so that machine can also be used as only an autoclave.
System should have minimum temperature of 130 deg. Celsius.
The system should be able to separate liquid and solid in the chamber itself before unloading treated waste.
In order to have proper and efficient sterilization, the system should be able to avoid any hazardous air exhaust.
Should have audio alarm system for any kind of error.
System should be able to treat mixture or different type of waste in one cycle.
System should be able to treat glass, scalpels, blades, needles, sharps.
The system should have automatic inbuilt washing cycle.
System should have facilities to detect leakage under pressure.
Should be fully automated and microprocessor controlled. If needed, automatic computerized reports facility should be possible.
System should have LCD touch screen facility with all indicator like selected cycle, start time, cycle stages in graphs, temperature, pressure, end time, cycle status i.e. pass / fail.
Should be able to collect cycle data on a memory card.
Should have its on Reverse Osmosis system for water treatment.
System should have cart or trolley to collect treated waste.
Should be as per norms of CPCB guidelines.
Should have quality assurance certification of CE/US FDA.

Note : The bidders have to provide / construct the required building for smooth functioning the complete system under turnkey project.

OFFICE OF THE DIRECTOR
RAJENDRA INSTITUTE OF MEDICAL SCIENCES, RANCHI & 834009, JHARKHAND

Tender Notice No. 8147 /RIMS, Ranchi, Dated : 02.12.2015

NOTICE INVITING TENDER

Due to unavoidable circumstances previously invited tender for Radiological equipments for Department of radiology under tender notice no. 8371 dated 22.07.2014 is being cancelled and fresh tenders are invited through sealed offers in two bid system (Technical & Price bid) by Speed post / Registered post only, from original equipment manufacturer or authorized dealer for (1) Supply & installation of C.T Scan, M.R.I etc. with all accessories on turnkey basis in the Department of Radiology (2) Supply & installation of equipments and all accessories (other than existing in the departments) on turnkey basis for up-gradation of existing various ICUs & ICCUs at RIMS (3) Establishment of Modular O.T. with supply & installation of equipments and all the accessories (other than existing in the O.Ts) on turnkey basis of various O.Ts at RIMS (4) Supply & Installation of Biomedical Waste Grade Heavy Duty Autoclaves, Microwaves, Shredders etc. on turnkey basis at RIMS, Ranchi, Jharkhand, India. Tenders will not be accepted by hand or any other agency.

A.	**Important dates for Tenders**	
1.	Pre bid meeting for discussion on various technical issues	On 14.12.2015 at 12:30 P.M at RIMS. All the intending bidders must attend the pre-bid discussion meeting for clarification of their queries & requirements of RIMS. No claims will be considered after finalization of tender paper.
2.	Date of issue of tender documents	From : 21.12.2015 to 18.01.2016 (The intended bidders may purchase tender document on any working day upon payment of Rs. 5000/- (Five thousand non refundable) only for each tender paper in cash to the RIMS Cashier or those who want to bid by downloading the tender document, they have to submit separate demand drafts of Rs. 5000/- for each tender paper with their technical bid.
3.	Last date of submission of sealed tender documents (Only by speed post / Registered post)	On 19.01.2016 till 04.30 P.M
4.	Opening of technical bid & discussion on technical issues.	On 20.01.2016 at 12:30 P.M in RIMS administrative conference hall, in front of purchase committee. All the bidders or their duly authorized representative must represent the tender opening for discussion & queries of purchase committee.

Note :1. For details of tender terms, conditions & specification please visit RIMS website : **www.rimsranchi.org** from 08.12.2015 for sample tender paper to attend the pre-bid meeting.
2. Final Tender paper will be uploaded on 21.12.2015 after pre bid meeting. All the bidders have to submit their tenders as per final tender paper (Not as per sample tender paper).
3. Before participating the meetings the bidders may physically visit the site and they may discuss with the concerned H.O.Ds / Officer Incharge, RIMS, Ranchi regarding requirements or queries.

B. In case of lack of any essential required documents the tenders will be rejected - The list of essential required documents which must be submitted with technical bid of the bidders :

i. Photocopy of JVAT (Sales tax) Registration certificate in Jharkhand State.
ii. Photocopy of JVAT/Sates tax clearance certificate of Jharkhand State, valid at the time of opening of technical bid.

OR

If the bidding agency is not registered under Jharkhand sales tax department, then they must give an undertaking through notary affidavit that “They will supply the equipment/items at RIMS, Ranchi after payment of JVAT/Jharkhand Sales tax on their own & they will make their own arrangements for custom clearance in case of imported equipments. They shall not demand any

document from RIMS for JVAT/custom clearance/duty exemption/waiver/relief in this regard".

iii. Copy of Manufacturing certificate or original copy of authorization from original equipment manufacturer in the name of authorized bidder for bidding on their behalf. (Photocopy or fax copy will not be valid).

iv. I.T. PAN no. of the bidder.

v. Earnest money in form of Demand Draft issued by any nationalized bank only in faviour of **Director, Rajendra Institute of Medical Sciences, Ranchi –**

(1) for C.T., M.R.I etc of Radiology department Rs. 10,00,000/- (Rupees Ten lakhs only).

(2) for Up-gradation of ICUs & ICCUs of various departments Rs. 3,00,000/- (Rupees Three lakhs only).

(3) for Modular OTs of various departments Rs. 4,00,000/- (Rupees Four lakhs only).

(4) for Biomedical Waste Grade autoclaves, microwaves, Shredders etc. Rs. 1,50,000.00 (Rupees One lakh Fifty thousand only)

vi. Affidavits through first class magistrate / Notary Public, mentioning that –

(d) "Our company has not been black listed or convicted in the past by any Hospital Organization or by any Government / Semi government organization / P.S.Us / C.B.I / C.C.I & free from all kind of litigation/allegations,

(e) That the firm has no vigilance case/CBI/FEMA/CCI case pending against him/supplier (Principal)

(f) That the firm is not supplying the same item at lower rate quoted in the tender to any government organization or any other institute".

vii. Technical specifications with catalogue & dimensions of equipment, accessories & details of turnkey works (if any required for installation of equipments). The bidders have to provide complete layout plan of the constructions & electrical works (if any) required and to be done by the bidder within their offer for installation & functioning of the complete system.

viii. I.T. return certificate & balance sheet of the bidders for last three financial year.

ix. Acceptance letter/undertaking that they shall provide five years comprehensive warranty for all the equipments and turnkey works. Then further five years comprehensive maintenance contract with all spares, accessories & labour charges for all the equipments as well as turnkey works.

x. For Radiological equipments bidders must have to enclose the license or NOC issued from Indian Atomic Energy Regulatory Board, Government of India for the same model of equipment which they have / are quoted / quoting in this tender.

xi. The bidders of Biomedical waste grade autoclave, microwave, Shredders etc must have to give an undertaking that their quoted products are as per norms of Central Pollution Control Board (CPCB) / State Pollution Control Boards. If it will not confirm the norms of CPCB / SPCB then the bidders shall replace their equipments by themselves without any extra cost.

C. Other terms & conditions of tender :

1. Technical part should contain the documents & request for proposal and all such details as mentioned in the term of reference or tender paper.
2. Financial part should contain the financial bid inclusive of equipment, accessories, all admissible turnkey works, warranty, guarantee, C.M.C., taxes etc.
3. Details with respect to terms and conditions & list of items and submission of such proposal can be obtained from "Term of Reference" i.e. tender document/paper & on RIMS **website - www.rimsranchi.org**
4. If required by the technical committee, all the tenderers have to organize practical demonstrations of the same model machine at their nearest installation site to the nominated technical team of RIMS, Ranchi on tenderer's own cost before finalization of technical evaluation report.
5. The undersigned reserves the right to accept or reject in part or as a whole any of the proposal received without assigning any reason thereof.
6. Any legal matter related to this tender shall be under jurisdiction of Hon'ble Jharkhand High Court, Ranchi.

7. Before participating the bid, the bidders may visit the site at RIMS, Ranchi and may have discussion with the concerned faculty H.O.Ds regarding their requirements & queries.
8. Price Bid of only those bidders will be considered/opened who will qualify the technical documents parts as well as technical specification parts.
9. For major equipment the bidders have to quote separate, sealed price for each & every equipment, so that price of only specific technically qualified items of the bidders may be opened.
10. No payment shall be made in advance, whatever circumstances may be.
11. The bidding prices will be valid at least for two years or the next tender which ever is earlier. If there will be government holiday on any last day of the above schedule, the tender process will continue on the just next working day.

Sd/-
Director
Rajendra Institute of Medical Sciences
Ranchi.